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VOL. 51 THIRD SERIES No. 8

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JOURNAL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

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SUPPLYING storage tanks for many of the outlying lighthouses around the coast of Britain is yet another unusual assignment undertaken by Braithwaites. The installation shown is at a well-known Scottish lighthouse. Here, as on other occasions when faced with difficulty of access to site and insufficient means of transport, tanks made up from Braithwaite standard-unit plates were successfully employed. Tanks for all liquid storage needs are described in a special Braithwaite brochure. *You are invited to apply for a copy.*

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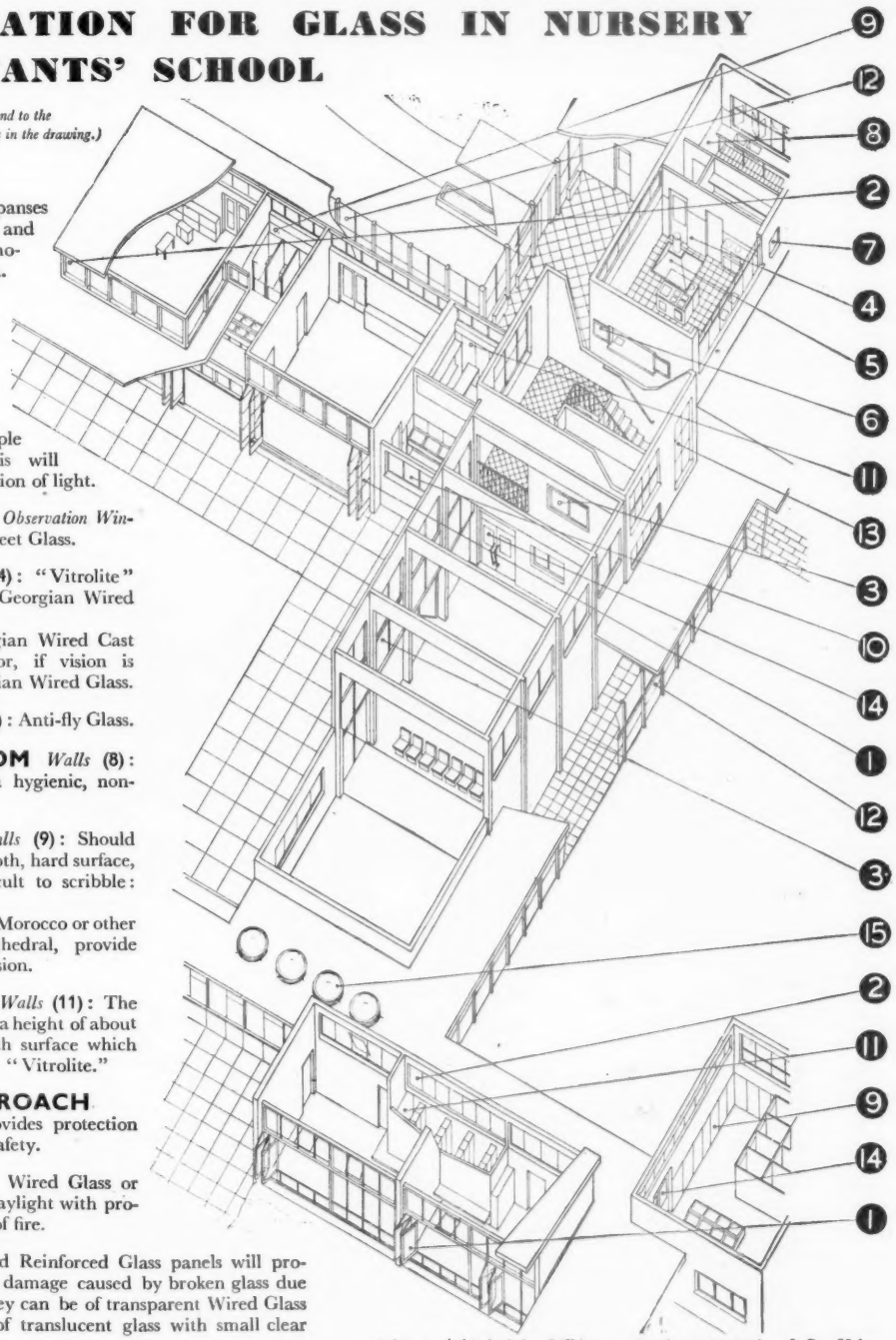
FACTS ABOUT GLASS FOR ARCHITECTURAL STUDENTS

SPECIFICATION FOR GLASS IN NURSERY AND INFANTS' SCHOOL

(The numbers in brackets correspond to the key numbers in the drawing.)



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Windows (1): Large expanses of glass have a bright and cheerful effect on the atmosphere of the classroom. ¼" Polished Plate Glass or Sheet Glass according to the size and type of window used.
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Ventilation canopies (5): Georgian Wired Cast glass panels.
Service hatch (6): Georgian Wired Cast sliding glass panels, or, if vision is desired, Polished Georgian Wired Glass.

LARDER *Windows* (7): Anti-fly Glass.

LAUNDRY ROOM *Walls* (8): "Vitrolite" provides a hygienic, non-absorbent surface.

LAVATORIES *Walls* (9): Should be finished in some smooth, hard surface, upon which it is difficult to scribble: "Vitrolite."
Windows (10): Pinhead Morocco or other formal patterned Cathedral, provide privacy with light diffusion.

CLOAKROOMS *Walls* (11): The walls should be lined to a height of about 5 ft. with a hard, smooth surface which can be readily washed: "Vitrolite."

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ENCLOSED CORRIDOR (15): Rough, Cast Domes.

This is published by Pilkington Brothers Limited, of St. Helens, Lancashire, whose Technical Department is always available for consultation regarding the properties and uses of glass in architecture.

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A*

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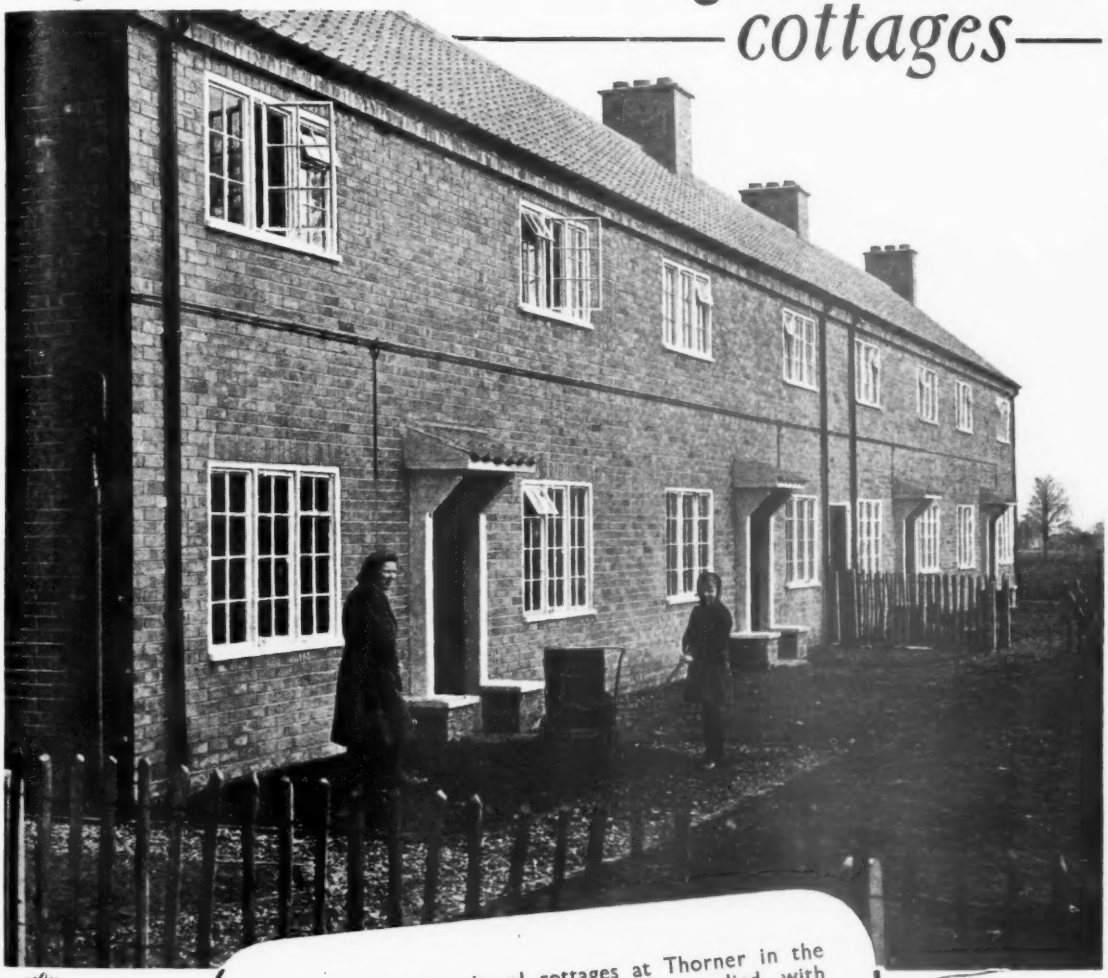
Callender CABLES — for agricultural cottages



These four agricultural cottages at Thorner in the Wetherby Rural District are being supplied with electricity by Electrical Distribution of Yorkshire, Ltd., whose underground mains terminate in the outdoor fuse box controlling the services to the cottages. Outdoor house distribution cables fixed on the surface are used for supplying each house. All the cables and fuse boxes are of Callender manufacture.

This method of supplying electricity to rural buildings has been extensively used for many years by the supply authority above mentioned and its associated companies.

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Wetherby R.D.C. Surveyor : T. V. Gray, M.Inst.M. and C.E., F.R.San.I.

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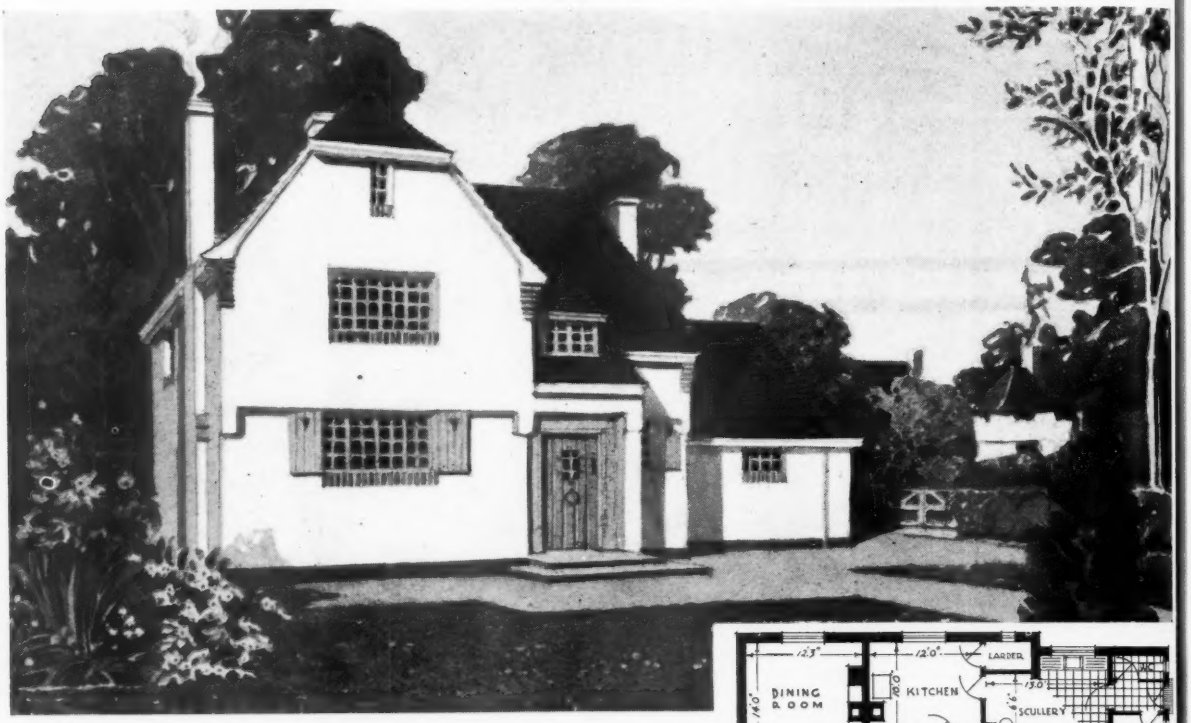
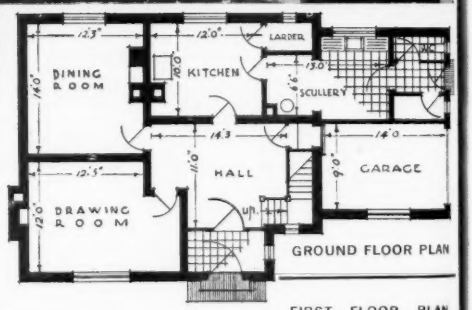
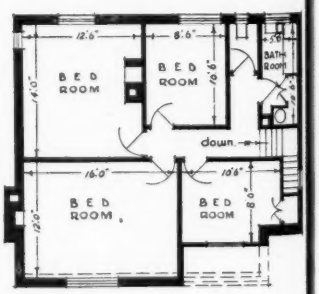
All over the World

WHEN PEACE RETURNS







PINCHIN JOHNSON'S CONTRIBUTION TO POST-WAR PLANNING (No. 3 of a series of 12)

OUR natural British conservatism will always keep a warm spot in our hearts for the traditional style of small house architecture, and in this design Mr. W. H. Clark has retained so much of its simplicity and beauty. Yet he has introduced modern, labour-saving features that must become an essential part of the post-war home. This plan is the third of a series especially commissioned by P.J.'s as a basis for discussion, and to show how one architect visualises the homes of the future. Walter H. Clark, L.R.I.B.A., F.I.B.D., is, we think, well fitted to give his impressions of the type of houses for heroes to live in—and that must be no "catch-phrase" this time. The complete series will cover council-houses, bungalows, detached and semi-detached houses, flats, etc. There are many ways of tackling the same subject, and other architects will have other ideas. However, better planned homes are bound to come and, whatever the form of building, improved materials for decoration and protection will be available. It is in the latter respect that P.J.'s will be glad, once again, to offer complete and unstinted service. The demands of war have created new materials and methods, which will be ready for the happier days to come, when war-paint gives way to Decoration. We shall be proud to help you build for Peace.

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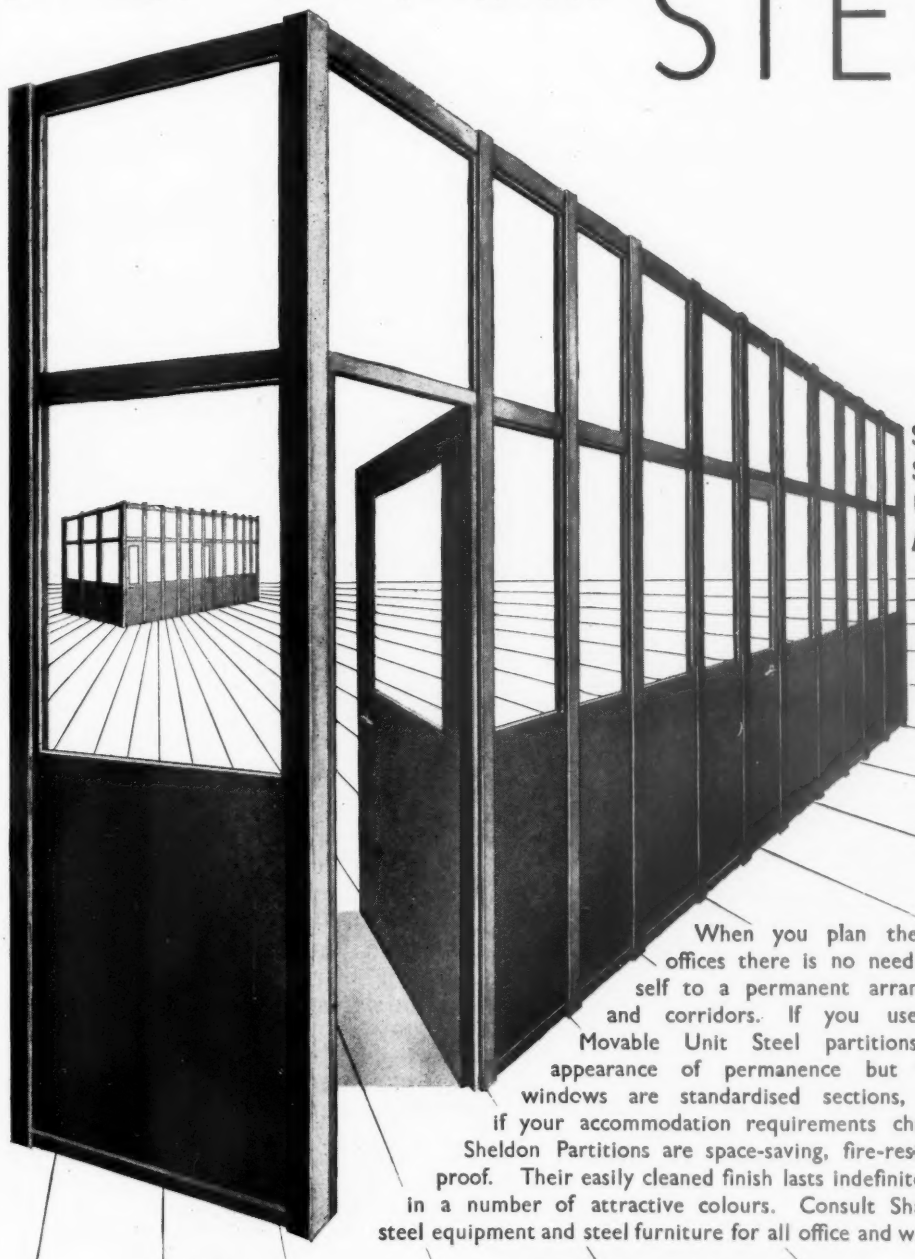
PLAN WITH STEEL



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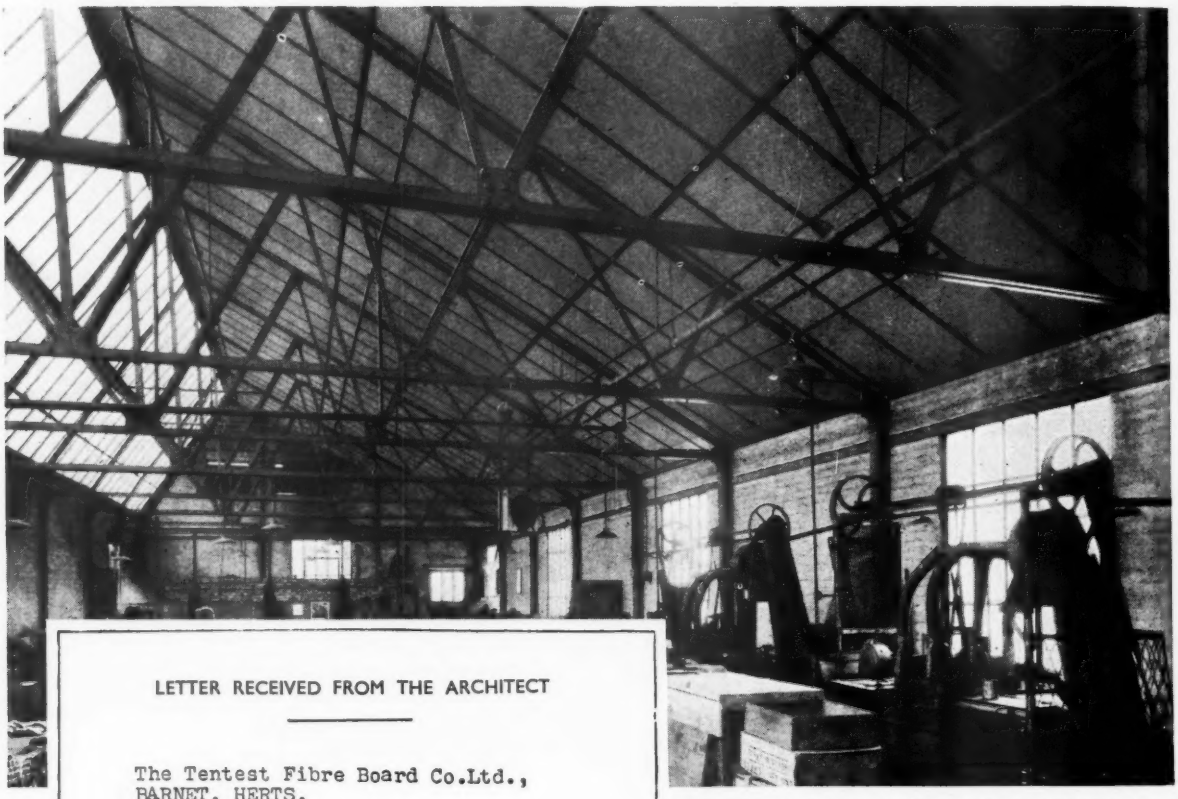
Insulating existing buildings



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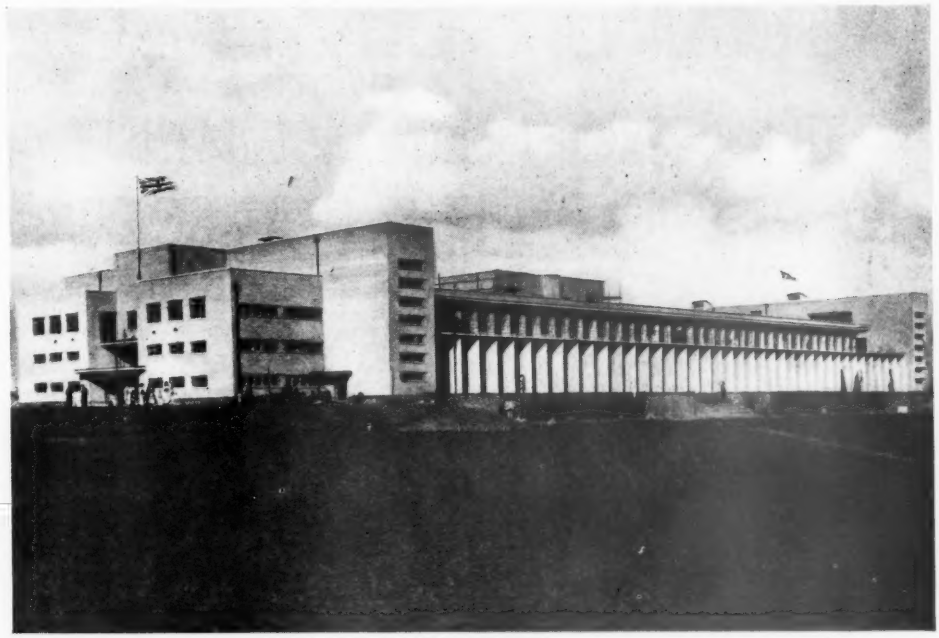

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Davy could have had little idea that the metal was to prove such a boon to mankind. Even now, we are only beginning to appreciate the wonders of the new world that aluminium will make possible. The authoritative advice that is available to all who contemplate using the aluminium alloys in post-war schemes is, therefore, of immeasurable value.

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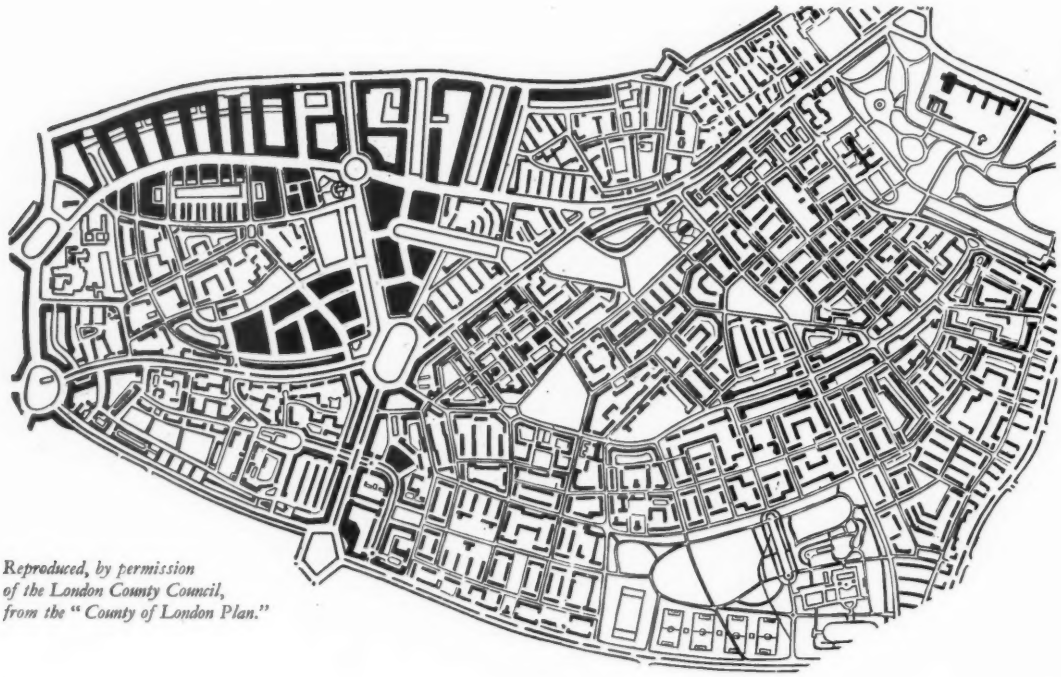

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LIGHTING IN RECONSTRUCTION

The scientific application of a high standard of artificial illumination should form an integral part of every new building project. Electric lighting technique, stimulated by the needs of war, will make an important contribution to the comfort and efficiency of the post-war world.

Public opinion will demand better lighting; plans to provide it should be made now.

The Lighting Service Bureau—backed by the research organisations of its members—offers unrivalled facilities for providing information on all aspects of modern illumination. The Bureau is at your service.

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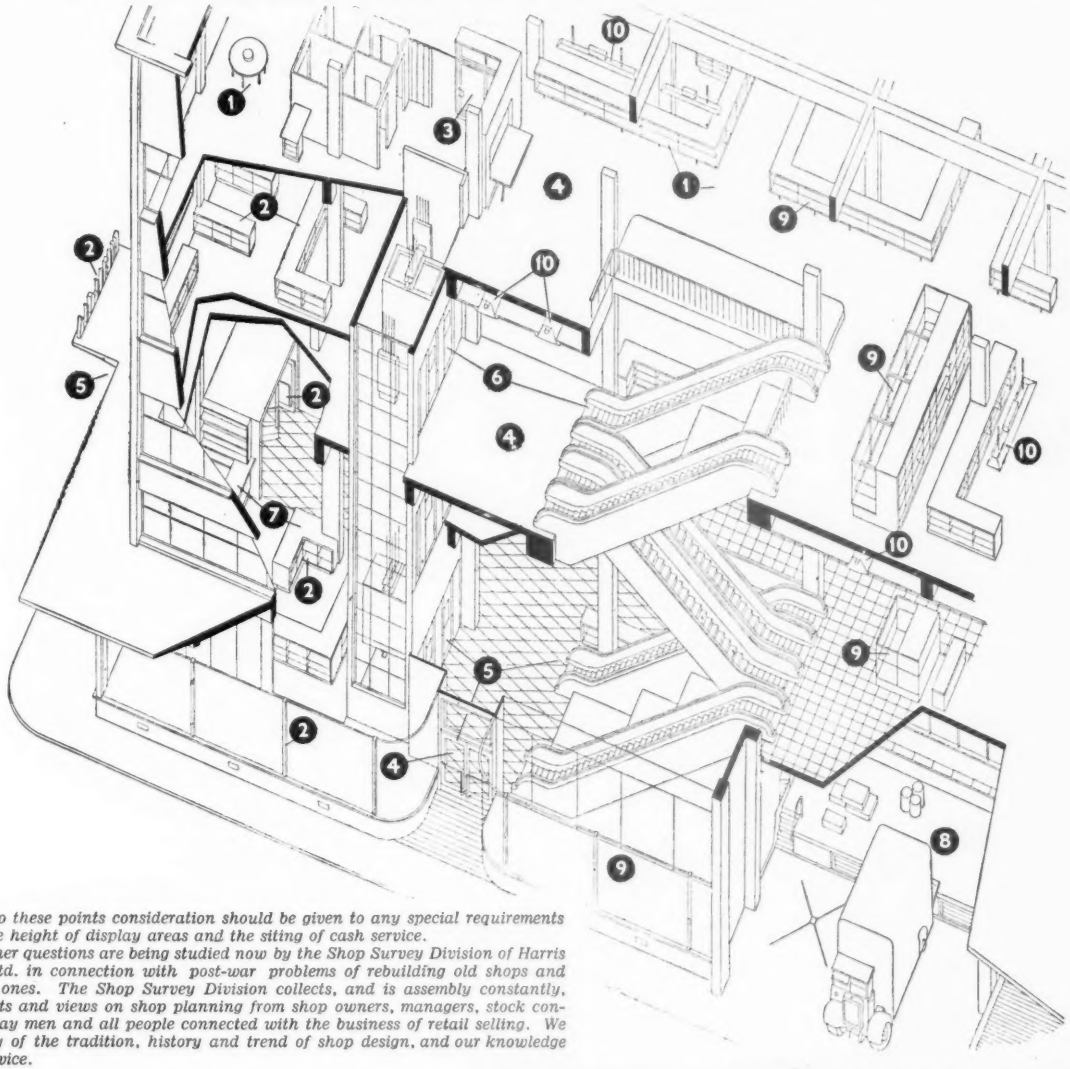
WHAT ARE THE PROBLEMS OF SHOP DESIGN?

TAKE FOR EXAMPLE, THE QUESTIONS THAT ARISE FROM INTERIOR LAYOUT:

1. What is the income of the majority of customers — i.e. should the plan of the shop be designed to give an impression of high-class and exclusive trade or one of popular mass appeal?
2. If a popular type of store, what materials best lend themselves to standardisation without losing eye appeal? i.e. for door surrounds, counter tops, display cases and lettering.
3. Is any degree of privacy essential in any department? This can be formed by the use of storage and display cases and is usually best arranged on upper floors away from main circulation.
4. Is the volume of business spread evenly over the week, or are there special peak periods for which provision must be made in the form of wide circulation space and additional entrances and exits ?
5. What is the most practical relationship between the entrance doors and the lifts and escalators? i.e. should customers be encouraged to pass through the store to reach lifts, etc.? How should emergency exits be arranged in relation to lifts, stairs, etc.?
6. Will lifts, escalators, or both carry the main traffic loads?
7. What are the most important departments for the particular store's business — how should space be allocated and divided? In our illustration space has been allowed close to entrance.
8. What arrangements are to be made for intake and storage of merchandise and for dispatch — use of side street or internal court within the shop — connection to basement by chutes and conveyors?
9. What size of display area is required? Is it to be continuous or broken up?
10. What methods of lighting? Use of fluorescent lighting. Use of recessed or sunk fittings.



In addition to these points consideration should be given to any special requirements governing the height of display areas and the siting of cash service.
These and other questions are being studied now by the Shop Survey Division of Harris & Sheldon Ltd. in connection with post-war problems of rebuilding old shops and making new ones. The Shop Survey Division collects, and is assembly constantly, opinions, facts and views on shop planning from shop owners, managers, stock controllers, display men and all people connected with the business of retail selling. We make a study of the tradition, history and trend of shop design, and our knowledge is at your service.

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B

FACTS ABOUT THE BUILDING USES OF CAST IRON

On and after July 1st, 1944, a department for dealing with enquiries about the use of cast iron in building, will be opened at the British Cast Iron Research Association. Known as the Building Uses Department, it will be available to architects and builders.

Mr. Derek L. Bridgwater, F.R.I.B.A. is acting as consultant to the department.

Enquiries should be addressed to

THE BUILDING USES DEPARTMENT
BRITISH CAST IRON RESEARCH ASSOCIATION
Alvechurch, Birmingham

JOURNAL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

3rd Series] [*Vol.* 51

No. 8 JUNE 1944

St. George's Hall, Liverpool, by Harvey Lonsdale Elmes. One of the photographs shown in the Exhibition of the work of the National Buildings Record at the National Gallery. See page 205.

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Journal

BIRTHDAY HONOURS

In the Birthday Honours List, published on 8 June, two members received outstanding awards. SIR GILES GILBERT SCOTT, R.A., Past President, has been awarded the Order of Merit, becoming the second architect only to receive this great distinction since the Order was founded in 1902.

PROFESSOR C. H. REILLY, O.B.E., LL.D. [*F.*], Professor Emeritus of Liverpool University, has been created a Knight Bachelor and is the first teacher of architecture to be so distinguished.

LT.-COL. A. F. HOOPER [*F.*] has been awarded the O.B.E. (Military Division), MR. R. A. H. LIVETT and MR. W. A. RUTTER [*A.*] have been awarded the O.B.E. (Civil Division) and MAJOR G. W. H. RYLAND [*F.*] the M.B.E. (Military Division).

Among the other awards the following are of particular interest to the R.I.B.A. :—

MR. A. J. MUNNINGS, President of the Royal Academy, and now a candidate for election as an Hon. Fellow, has been created a Knight Bachelor.

MR. GEORGE PEPLER [*Hon. A.*], Principal Assistant Secretary and Chief Technical Adviser of the Ministry of Town and Country Planning, and MR. H. B. WALLIS, Principal Assistant Secretary, the Board of Education and a member of the R.I.B.A. Board of Architectural Education, have been awarded the C.B.

SIR IAN MACALISTER

The accident to Sir Ian MacAlister, which occurred on 2 March, proved to be more serious than was at first supposed, but after a second operation he is now making satisfactory progress.

Prisoners of War and the County of London Plan

Among the many letters received by the R.I.B.A. from prisoners of war who have benefited from the R.I.B.A. books service, the following is of special interest. Stalag Luft III is the camp from which an escaping party of British officers was shot by the Germans.

Flight-Lieutenant Pickstone also sent a post card in which he said " nearly two-thirds of the camp sat for two hours in a very cramped theatre and enjoyed the lecture. As a topic the Plan has rivalled the war, which is a record ! "

From the Senior British Officer,
East Camp,
Stalag Luft III, Germany.
11.4.44.

I believe that the Royal Institute of British Architects will be interested to hear of a lecture recently given here on the County of London Reconstruction Plan. The lecture lasted for two hours and aroused so much interest that it was necessary to repeat it on three successive evenings in order to admit the people to whom this is a subject of great importance.

The lecturer, Flight-Lieutenant H. W. Fluck, although evidently not an experienced speaker, nevertheless succeeded in holding the interest of his audience from beginning to end. In compiling his lecture notes Flight-Lieutenant Fluck was subsequently aided by Flight-Lieutenant G. M. Fuller and H. W. Pickstone, both of whom, incidentally, recently wrote the Intermediate Examination of the Royal Institute of British Architects.

The lecture was illustrated by means of an epidiascope and I am afraid that our copy of the L.C.C. Plan had to be sacrificed. In view of this, may I ask you to send me another copy, together with any other plans which may have been completed for the reconstruction of other parts of Britain. I should also be glad to receive copies of the Scott and Uthwatt Reports.

I enclose, for your information, a synopsis of Flight-Lieutenant Fluck's lecture.

Yours sincerely,
MICHAEL KANE,
Squadron-Leader, Royal Air Force
Education Officer, East Camp.

Forwarded
R. KELLETT,
Group Captain, Royal Air Force, Senior British Officer, East, Stalag Luft III.

Appointment

Mr. A. F. B. ANDERSON [*F.*], S.A.D.G., has been re-elected President of the Architectural Association for session 1944-45.

Demoblisation and Post-War Employment

1. The Royal Institute of British Architects propose to form a Card Index (applicable to architects normally domiciled in the United Kingdom) which will be available to all Registered Architects in addition to Members, Students and Probationers of the R.I.B.A., Members of the Allied Societies and of the Architectural Association.

2. The primary object of the Index is to provide the information required to ensure that those demobilised from the Forces, or released from other forms of National Service, are given every opportunity of obtaining suitable employment where such is available.

3. Registered Architects who are not Members or Students or Probationers of the bodies mentioned in paragraph 1, but who wish to avail themselves of this scheme, should make application to the R.I.B.A. for a copy of the necessary Questionnaire to be sent to them. They should complete the Questionnaire and return it as soon as possible to the R.I.B.A. so that the particulars may be included in the Card Index.

Headmastership of the Regent Street Polytechnic School of Architecture

APPLICATIONS are invited from Chartered Architects for the Post of Head of the SCHOOL OF ARCHITECTURE, SURVEYING and BUILDING in succession to Mr. Joseph Addison [*F.*], who has resigned to take up an appointment with the Board of Education. The person appointed will be expected to commence duty on 18 September 1944.

Candidates should hold the Degree or Diploma of a School of Architecture which is fully recognised by the R.I.B.A. and have had teaching and administrative experience in a school recognised for the Intermediate or Final Examination.

Salary scale, £730 by £25 to £930 plus war-time bonus of £52 per annum, subject to the usual 5 per cent. deduction for superannuation. Commencing salary according to qualifications and experience.

Further particulars and forms of application, which must be returned by 8 July, can be obtained by sending a stamped, addressed foolscap envelope to the Director of Education, The Polytechnic, 309, Regent Street, W.1.

Members and Students Serving with the Forces

Hitherto during the war years lists of Members serving with the Forces and their ranks have been published regularly in the JOURNAL. In the last few months the demands made on JOURNAL space by the Annual Report and the reports of the meetings now being held have forced the exclusion of the lists. The number of names not published is so great—about 1,800—that we are compelled to cease publication of the full lists as hitherto, but will continue to publish lists of honours and casualties and of appointments of exceptional and general interest.

The office keeps up-to-date and accurate records, as far as possible, of all Members' ranks, appointments and addresses, and will be glad to answer enquiries and also to receive information on these matters from members or their relatives.

The following list, the fortieth to be published, includes casualties and honours only :

KILLED

BURTON, KENNETH [*A.*], Lieut. R.A.
CASSON, STANLEY [*Hon.A.*], Lt.-Col.
HAMMOND, G. N. [*S.*], Flying Officer R.A.F.
INGLIS, C. W. A. [*A.*], Major Indian Engineers.
LAWSON, G. W. [*S.*], L.A.C. R.A.F.
MARSHALL, C. BERESFORD, M.B.E. [*F.*], Sqdn. Ldr. R.A.F.
MASON, O. J. C. [*A.*], Flight-Lieut. R.A.F.
PERRY, K. [*S.*], Lieut. R.E.
PURVIS, B. L. [*S.*], F/Sgt. R.A.F.
WITHERS, KENNETH G. [*L.*], Sqdn. Ldr. R.A.F.

MISSING

CLINGING, B. J. [*S.*], Sgt./Navigator R.A.F.

PRISONER OF WAR

BALL, K. J. [*S.*], Sigmn. R.C.S.
KNIGHT, F. S. [*S.*], Flying Officer R.A.F.
LAVER, A. H. [*S.*], Lieut. R.E.
STARK, IVAN A. [*S.*], Pilot Officer R.A.F.
TURNER, FRANK [*S.*], Sgt. Sherwood Foresters.
WESTAWAY, R. J. [*S.*], S/Sgt. R.E.
WICKHAM, J. H. D. [*S.*], Lieut. R.E.

DISTINCTIONS

AWARDED THE MILITARY MEDAL

LUXTON, H. N. [*A.*], Gnr./Svr. R.A.

AWARDED THE DISTINGUISHED FLYING MEDAL

MORTIMER, G. E. [*S.*], Flight-Lieut. R.A.F.

AWARDED THE DISTINGUISHED FLYING CROSS

PEATFIELD, THOS. [*A.*], Pilot Officer R.A.F.

SOCIAL SURVEY TECHNIQUE OF OBTAINING HOUSING INFORMATION

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The natural sciences have begun to revolutionise traditional methods of house construction and in all branches of building, the building scientist is playing an increasingly important role.

The social sciences, in contrast, have not so far been of equal importance, yet it is to the social sciences that the architect, the builder and the planner must look for some parts of the answers to the questions of " What to build " and " Where to build," the basic problems of house design and of town planning. The extensive schemes of municipal housing and the vast numbers of speculatively built houses erected in the inter-war period were basically little more than the traditional labourers' cottage made sanitary and provided with a few simple appliances and often a quantity of trimmings dimly related to some architectural style. This main pattern of house design has been crystallised by the influence of obsolete model by-laws.

The current method of designing houses for rehousing projects appears to be based largely upon intuition. Quite arbitrary standards of total floor space are often laid down by authorities and interior design is often the result of the playing with a kind of jig-saw puzzle of interior walls to give what is considered the best arrangement of two or three rooms downstairs and two or three rooms upstairs, and the architect often has only very vague ideas as to what is to happen in these rooms, for he cannot, as when he's catering for a private client, know much about the family composition of the families who are to live in his houses nor the patterns of their daily lives.

The plans thus arrived at are almost invariably static, that is to say the bedrooms are designed so that a bed can be accommodated in them and certain other items of furniture. The selection of these static items is often based on the personal experience of the architect as is demonstrated by the pictures of the interiors of almost any of the proposed new houses ; (Here, of course, the motive may not only be to demonstrate the efficiency of the design but also to make it look attractive and to sell it " to the public "). What is never done in relation to such a plan is to take account of the space required in which the family or the part of the family occupying a particular room dresses and undresses, completes its toilet and finally gets into bed, that is to say the dynamic requirements rather than the static ones.

In the same way that the architect fails to take account of the true situation in his static design by selecting modern and functional furniture, he postulates patterns of behaviour within the home, which although strictly logical and strictly rational in no way correspond to those of the prospective tenant (or his own for that matter).

It may be argued that the architect and the builder know quite well the requirements of the families to be rehoused by their experience in the open market that houses which were not satisfactory would remain unsold and that the most popular designs would be those that met the greatest number of essential requirements. This happy theory takes little account of the facts of small house purchase.

A brief tour of suburbia must convince even the most sceptical that any dwelling no matter how badly built or how fantastically designed could have been sold in the inter-war period for a deposit of £25 and the rest as rent. The methods of sale were relatively simple ; one or two main patterns of house were built by the hundred and each pattern had its show house, attractively furnished and it was this which was the main selling point. Individual salesmen adopted different tactics ; in some cases an elaborate bathroom was provided with a multiplicity of chromium gadgets and a quantity of tiled nick-nacks—the bathroom sold the house ; in other cases it was the tiled kitchen with enamelled cooker ; in other cases the hall panelled in Japanese oak ply.

The state of mind of the consumer must also be considered. The inter-war period was one of great social insecurity. The presence of mass unemployment and the fear of war sent vast numbers of Englishmen into the security and isolation of their own castle. It is fairly clear that it is not enough to rely on the evidence of the market for the basis of house design, although the experience of the owners of those same houses might well provide much useful data.

A field of research which is of obvious value and which has been almost untouched is the experience of those who have the job of administering as rent collectors or housing managers the large municipal housing projects. If such managers were trained in the essential disciplines of social inquiry their access to large numbers of homes in which certain essential data was controlled, i.e., house design would make possible important basic research.

The contribution of the sociologist, therefore, to the problems of house and community design may be listed as follows :—

1. The Study of Attitudes.
2. The Study of the Dynamics of Family and Community Life.
3. The Study of the Objective Factors in Housing Problems.

The Social Survey Method

The Social Survey method uses a variety of techniques for solving problems by reference to the people themselves.

These techniques include observation, direct observation and observation using photography, the interview and measurement.

The basis of social inquiries must be scientifically controlled and as a rule the subjects for an inquiry are chosen as a random sample of the universe under discussion or by means of a census in which information is obtained about all.

Where a sufficient number of the variables in the situation are known it is possible to choose a sample in which a number of these are controlled and this can reduce the amount of labour involved.

A number of surveys have been made without this essential basis with the result that the findings of the surveys are of limited value. This applies to the survey made by the Women's Advisory Housing Council, to the Mass Observation survey " People's Homes " and to the Department of Health for Scotland's survey contained in an appendix to " Planning our New Homes." In two cases a much smaller sample chosen scientifically would have provided the essential information with a very much smaller expenditure of time and energy.

It is important to emphasise this fact about sampling which is a commonplace throughout the natural sciences and is now well

known to industrialists as it appears not to have been appreciated by many of those who are concerned with housing.

Another point which perhaps should be made is that social inquiries demand the skill of specialists particularly in field work, as in no other science are the interests of the experimenter so closely bound up with the subject of the experiment and in no other science does success depend so much on the ability to remain objective whilst carrying through most delicate social relationships.

The Study of Attitudes

It is in the study of social attitudes or opinions that most controversy around housing and planning surveys is found. There are many fields of attitude study in which the opinion of the housewife is a very valuable guide to the planner. At the same time there are other fields where this opinion may be confusing and deceptive. The essence of successful attitude study is to plan the experiment so that the known dangers are taken care of.

The common case where misleading results are being obtained is in the discussion of whether people want to live in houses or flats which has now reached the stage of being almost meaningless. It is extraordinarily difficult to get useful information about things of which people have no experience and the fear of the unknown is often a strong factor in determining opinion. A better way to solve this particular controversy would be to question similar groups of people living in the sort of flats visualised and comparing them with a like group living in the type of houses which are a possible alternative. As an example of the difficulty in a certain inquiry it was found that a group of people preferred the bungalow to any other type of dwelling, but further questioning showed that their interests were not in the bungalow as such but in a single storied dwelling which would be quiet and which had a garden. This might or might not have meant only a bungalow.

This controlled type of attitude study can be used to compare the preferences of like groups for different types of dwelling, amenity and fitting and might have immediate application to the problem of housing provision for old people.

Where people have experience of the subjects under discussion their opinion can be very valuable and there is an obvious field for testing the efficiency of certain standards of house design by questioning large numbers of people living under the same conditions and by this means discovering the main faults in the design and the type of family who finds any specific pattern of house most suitable to their needs.

In many other fields it is important to know opinions and beliefs. In some matters social waste can often be avoided by prior consultation with prospective tenants about such subjects as finishes, decorations, etc., and the provision of fittings ; thus if the tenant is free to choose the type of cooking apparatus which he prefers it is worth while knowing his choice in advance and the expense of installing the wrong apparatus and replacing it by the chosen one may be avoided.

Many of the preferences and desires of tenants are irrational and not based on experience. If these are known about they may be taken into consideration and if the subject is one of sufficient importance the irrational beliefs may be countered by education or administration—in fact, domestic science largely fails when it comes to be applied to the living conditions of ordinary people because it is so often based on purely rational laws and does not take account of traditional behaviour patterns.

In case these remarks may have created too pessimistic a view of the value of attitude studies two examples are quoted to show how, in certain circumstances, information which is obtained from this type of inquiry gives results which are closely corroborated by physical information.

In the case of a study made of sounds in dwellings a comparison of those who lived in flats with steel construction and those who lived in flats with other construction showed that whilst both groups heard the same number of noises a greater proportion of those who lived in steel construction flats were troubled by noises and structurally-borne noises troubled more people in steel frame flats than in others. (*See tables below*)

TABLE 1—NOISES IN DWELLINGS INQUIRY

Noises Heard in Flats of Different Construction

	Noises Heard from Neighbour's Home						*Noises from Neighbour's Home which Trouble People*					
	Steel Frame			Others			Steel Frame			Others		
	No.	%	%	No.	%	%	No.	%	%	No.	%	%
Cistern		41			41			12			8	
Baby crying		17			20			3			5	
Children playing		30			42			8			9	
People moving		63			70			20			12	
Wireless		74			73			24			11	
Piano or other musical instruments		20			19			5			2	
Conversation		37			43			14			8	
Movement of furniture		47			34			10			6	
Doors banging		59			58			27			19	
People walking upstairs to other flats		65			77			26			16	
Others		14			20			8			8	
All who are troubled by noise from neighbour's house							80	60	57	106	37	35
All who are not troubled by noise from neighbour's house							53	40	38	184	63	60
All who hear noise from neighbour's house	133	100	95	290	100	95	133	100	95	290	100	95
All who don't hear noise from neighbour's house	7		5	14		5	7		5	4		5
ALL WHO LIVE IN FLATS	140		100	304		100	140		100	304		100

TABLE 2—LIGHTING OF DWELLINGS INQUIRY

Housewife's Opinion of Her Ability to See Analysed in Relation to Light Meter Readings

	Average Reading in Foot Candles		
	Well	All Right	Badly
Cooking	1.7	1.3	1.2
Washing up	3.4	1.3	1.1
Preparing food	2.3	1.8	1.4
Reading and Sewing in Kitchen Living Room	6.1	5.0	3.4
Reading and Sewing in Sitting Room or Parlour	5.8	5.2	4.0

The standard deviations on these numbers are of the order of .1, so that all the differences except perhaps those between " all right " and " badly " for cooking and washing up are significant.

It is particularly impressive to note the differences in the amount of light measured objectively which is available to housewives who say that they can see " Well," " All right " or " Badly " when asked.

The Dynamics of Family and Community Life

Possibly the first and most important piece of information which is needed is the very elementary one of family size and composition. It is not unusual to discover that a local authority has decided to built two types of houses by the hundred—the parlour type and the non-parlour type—or at the most four or five types of house.

In order to decide effectively on type of house, information will be needed about family size and family composition and this information is needed in great detail if the best possible provision for the activities within the home is to be made.

Without going into the complex problems of relationship an example from a Scottish inquiry will show the extent of the simpler problem. *(See table below)*

TABLE 3
THE LOCATION OF DWELLINGS IN SCOTTISH TOWNS INQUIRY
Family Composition

	No.	%		No.	%
1 adult	176	7	4 adults	196	8
1 adult 1 child ..	7		4 adults 1 child ..	96	4
1 adult 2 children	5		4 adults 2 children	39	2
1 adult 3 children	1		4 adults 3 children	28	1
1 adult 4 children	2		4 adults 4 children	7	
2 adults	419	16	5 adults	99	4
2 adults 1 child ..	285	11	5 adults 1 child ..	55	2
2 adults 2 children	234	9	5 adults 2 children	27	1
2 adults 3 children	103	4	5 adults 3 children	12	
2 adults 4 children	36	2	6 adults	33	1
2 adults 5 children	16	1	6 adults 1 child ..	24	1
2 adults 6 children	10		6 adults 2 children	16	1
3 adults	272	11	7 adults	14	1
3 adults 1 child ..	101	4	7 adults 1 child ..	15	1
3 adults 2 children	67	3	8 adults	6	
3 adults 3 children	26	1	9 or more adults or		
3 adults 4 children	17	1	children in family	71	3
3 adults 5 children	12		Sample : 2527		

The " ideal " family of two adults and three children is seen to be only 4 per cent. of all families in Scotland.

This kind of information can only be used in a very narrow sense rather on the lines of the standards of overcrowding unless it is related to the pattern of activity within the home.

This relation of house accommodation to family size is not a static problem, however, and if an estate of houses is built which has a life of say 60 years, then the accommodation provided must take account of the changes in family life and in household composition which will take place during the life of the estate. In order to deal with this population, estimates will have to be calculated from the detailed information about family and household composition mentioned above.

The dynamics of life within the home have several aspects ; the first is the activities of each member of the family, that is to say what these activities are, where they take place, when they take place, the extent to which they are conditioned by the house design and the extent to which they are frustrated or facilitated. The second factor is the extent to which these activities are the activities of more than one member of the family and the extent to which they are carried on in isolation or whether different activities of different members of the family have to take place simultaneously in the same room, and it is necessary to study again conflict of activities resulting from this and how far this conflict is the result of the influence of house design or size. (It may merely be that traditional patterns of usage create unnecessary conflicts which could be removed if tenants were educated to a fuller use of their space) and finally the activities must be studied in themselves in terms of space and volume, studies which parallel in some ways the motion studies of industry.

It will be realised that these studies of activities will be much more valuable if the objective circumstances in which they take place can be described ; thus it will be useful to know number of rooms, size of rooms, shape of rooms, amount of space occupied by furniture, lay-out of furniture and fittings, the amount of light available, the amount of heat and in fact, all the other physical variables.

Allied to the problems of activities are the problems of possession and it becomes obvious that it is necessary to study not only what people do in their homes, but the things they put in their homes and what they do with them. (To take a simple case the extent to which the accumulation of household treasures in the parlour renders the room so overcrowded as to be useless).

So far no adequate study of activities within the home have been made in this country although a certain amount of partial data has been collected incidentally. The most adequate survey yet made (as far as the author knows) is that of the Co-operative Building Society in Sweden by Dr. Svend H. Riemer ; the survey was made in Stockholm. This inquiry must be regarded as a pilot inquiry upon which large scale inquiries must be based since it only records the activities of 215 families and the number of variables in such an inquiry are very considerable.

The basic information was a record of the activities of every member of the household during a week and this was supplemented by a series of questions about the attitude of families towards their homes in relation to typical situations of family life ; the preparing and serving of food, the entertaining of guests, the use of radio, care of children, etc. An example of the basic data collected is given below and some samples of the information collected about adjustment to the house in relation to activities is given in the extract from the guided interview described in the second schedule (overleaf).

From this data it was possible to illustrate diagrammatically the flow of activities within the home, to show at what points in both time and space, overcrowding and conflict arose, to show the extent to which rooms were utilised and the factors influencing that utilisation, and to show to what extent activities were conditioned by the presence or absence of certain furnishings, fittings or appliances.

This information was then interpreted by analysing it in terms of some of the other variables in the situation.

The dynamics of living have also been studied in terms of space and motion by The John B. Pierce Foundation, who have evolved experimental techniques using photography and models in order to ascertain the volume and shape occupied by a person when dressing, or washing, or crossing a room. The models which are produced by this method can be used in a model room with scale furnishings to ascertain the adequacy of space provision for each room according to its specific function. So far this technique is only just being developed and the more complicated problems of space and volume for the activities of groups of people have yet to be studied. Nevertheless this technique is quite logical and seems a most reasonable way of approaching the basic problems of space provision. The resulting models look rather like Henry Moore's sculptures as may be seen by the example which shows the space required when a man dresses and is a composite model based on a study of two different men.

Planning Studies

In the field of planning there have been a number of experimental social surveys, bu so far they have not been integrated with a complete series of surveys as suggested by Geddes. Two studies may be mentioned as examples of studies of general planning principles—" Urban Planning and Public Opinion," made by the Bureau of Urban Research of Princeton University, and the " Location of Dwellings in Scotland," a survey made by the Wartime Social Survey.

INVESTIGATION SPONSORED BY THE CO-OPERATIVE BUILDING SOCIETY IN SWEDEN

Schedule 1. Record of Daily Activities. (Saturday)

Housewife			Husband			Son (6 Years Old)		
Activity	Time	Room	Activity	Time	Room	Activity	Time	Room
Arose	7.20	Living-Room	Arose and Dressed	7.35	Living-Room	Arose	7.35	Living-Room
Bathed, Dressed		Bathroom						
Prepared Breakfast	7.55	Kitchen						
Ate Breakfast	8.05	Kitchen	Ate Breakfast	8.05	Kitchen	Ate Breakfast	8.05	Kitchen
Washed the Dishes	8.25	Kitchen	Went to Work	8.20		Played in Yard	8.40	
Read the Newspaper	8.45	Kitchen						
Made the Beds	9.25	Living-Room						
Dusted	9.50	Entire Apt.						
Prepared Lunch	10.20	Kitchen				Came Home	10.15	
Ate Lunch	10.35	Kitchen				Ate Lunch	10.35	Kitchen
Washed the Dishes	11.00	Kitchen				Played	11.00	Kitchen-Living-Room
Washed the Floor	11.20	Entire Apt.						
Made Telephone Calls	12.15	Living-Room						
Prepared Dinner	12.35	Kitchen						
Baked a Cake & Cookies		Kitchen						
Cleaned Silver		Kitchen	Came Home	2.25				
Drank Coffee	2.30	Living-Room	Drank Coffee	2.20	Living-Room	Drank Chocolate	2.30	Living-Room
Washed the Dishes	2.50	Kitchen						
Went to Beauty Parlour	3.05	Outside	Went for walk with son	3.05		Walk with Father	3.05	
Bought Fruit & Flowers								
Arrived Home	4.15							
Prepared Dinner	4.30	Kitchen						
Arranged Fruits & Flowers			Came Home	5.00		Came Home	5.0	
Ate Dinner	5.15	Living-Room	Ate Dinner	5.15	Living-Room	Ate Dinner	5.15	Living-Room
Washed and Put Away Dishes	5.50	Kitchen	Read the Newspaper		Living-Room	Played and made drawings	5.50	Hall-Living-Room
Prepared Sandwiches for Buffet Supper	6.30	Kitchen	Listened to Radio		Living-Room			
			Made drawings for son		Living-Room			
Received two Visitors	7.10		Conversation with Visitors	7.10	Living-Room			
Served Coffee to Visitors	7.25	Living-Room	Drank Coffee	7.25	Living-Room	Drank Milk	7.25	Living-Room
Made Bed for Son	7.55	Living-Room				Went to Bed	7.55	Living-Room
Put Son to Bed								
Played Bridge with Visitors	8.05	Hall	Played Bridge	8.05	Hall			
Served Buffet Supper	10.20	Hall	Ate Buffet Supper	10.20	Hall			
Visitors Left	11.05							
Washed the Dishes	11.10	Kitchen	Dried the Dishes	11.10	Kitchen			
Prepared for Bed	11.30	Living-Room	Helped Make Beds	11.30	Living-Room			
Went to Bed	11.45	Living-Room	Went to Bed	11.45	Living-Room			

Schedule 2. The Guided Interview on Functional Adjustment Problems. Selected Questions and Corresponding Answers from Case No. 13.

(2) Closets, cabinets, etc. Is there enough space (for food, dishes, kitchen utensils, cleaning equipment, linen)? Is the arrangement suitable or not (shelves above the stove; position of closets in relation to their actual function; accessibility)?

Answer: *We want the light in the kitchen directly above the stove. Closets always come in handy, so there will never be too many. However, there is quite sufficient closet-space in this apartment, so we use it for toys, medicine, books, etc. We want built-in shelves in the kitchen. Everything else is well arranged in the kitchen.*

(12-15) Number of Wardrobes. Is it sufficient? Would you prefer one large wardrobe, or several smaller ones?

Answer: *There is a wardrobe of 2.20 by 1.10 metres in this apartment. There ought to be electric light installed if the wardrobe is as large as that. According to the original plan of the apartment there should have been two wardrobes; and that is what we should like to have. But in that case one of the doors to the wardrobes would have to be placed in the middle of one of the walls of the living-room. As we wanted the wall space for the placement of furniture, we preferred to have one wardrobe only. They might have taken part of the wardrobe space and established a closet for linen instead. H.S.B. should provide linen closets.*

(25) Why do you take your meals just in. . . . ? Discussion of other possibilities, for example, overcrowded in kitchen, smells spread in the apartment. Discussion of more suitable design of apartment in this respect.

Answer: *We eat in the kitchen or in the hall. It is not too crowded as we are only very few persons. We would not at all like a kitchenette with indirect light.*

(26) Do you have many visitors? How do you usually entertain your guests? How many visitors can you comfortably have in your apartment? Do you have to be careful and especially quiet when you have visitors, for the sake of your neighbours or your children?

Answer: *When our boy plays on the floor and makes the slightest noise with his toy-cars, etc., the neighbours will knock and urge him to be quiet. Our neighbours are a nuisance. This is in spite of the fact that we have special insulation on our floor. We have almost no visitors at all, we must be careful not to disturb our neighbours. If we have visitors once in a while, we have only two or three people. We usually sit in the hall when our boy has gone to bed in the living-room.*

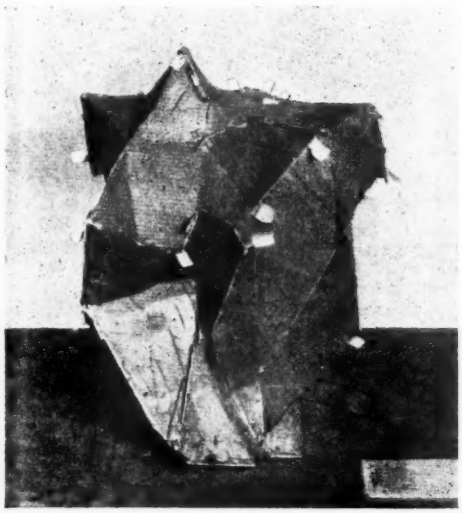
(27) Where do the different members of the family sleep (room, furniture)? Where is the bed linen kept?

Answer: *We all sleep in the living-room. The boy sleeps in a bed that is folded up in daytime. Husband and wife sleep on a sofa—double-bed. Even in the daytime the linen is kept in the sofa. It would be good to have a separate bedroom; we should like to have two smaller rooms in the same space. In that case, the kitchen might be somewhat smaller also. This will become even more desirable when the boy grows up.*

(29) Is there anybody in the family who needs isolation for any particular kind of activity (interest in radio, music, etc.)? What difficulties arise?

Answer: *We listen very much to the radio and we all want to listen. The boy falls to sleep most easily when the radio is on.*

Quoted from "Family Life as the Basis for Home Planning," by Svend H. Riemer, Ph.D.—"Housing for Health," Lancaster, Pennsylvania, 1941.



Model of space required by a man dressing from *Measuring space and motion*. Research Study 6. John B. Pierce Fdn., N. York 1944.

The American survey studied problems of house ownership, neighbourhood amenity, inter- and intra-city mobility, and made a particularly interesting study of social relations with neighbours. In this study it was found that neighbourhood satisfaction as measured by the satisfaction that people expressed with their neighbours was highest in the small town of from 5,000 to 25,000 inhabitants. The study of social relations with neighbours is being elaborated and used to discover the existence of small communities within the larger unit and to find out what conditions the existence of these communities in an experimental study now being made in a northern town.

"The Location of Dwellings in Scottish Towns" was an inquiry made for the Department of Health for Scotland and was designed to give some general answers to the main problems of siting new houses and communities. This study included an account of family composition, a study of the physical relationship of the home to the places of the main activities and interests of the members of the household in terms of time and distance. These activities and interests included work, shopping, schools, clinics, places of amusement and places of worship. A study was also made of attitudes to the future dwelling and its location. One of the special problems studied was that of convenience and an attempt was made to define convenience in terms of time and distance for different interests. Examples are given below of the proportion of housewives who consider their local shopping centre and their main shopping centre convenient to their home when these are located at different distances and a similar example is given about convenience in relation to work place for men.

(*See tables 4, 5 and 6*)

When these studies have been extended it should be possible to adopt standards of convenience for every main interest and activity and this standard could be varied to cater for the different needs of different age groups and for men and for women; thus if an estate was to be planned for old people the standards adopted would obviously be different from an estate planned for the normal population.

If it was then decided that the standard to be adopted was, say, convenience to 75 per cent. of the population, reference to such results would site work places, churches or shops within belts of a given distance of the home or group of homes, or within journeys of a given length of time. The time factor rather than the distance factor was very important and suggests that it is unwise to plan a new town or a new estate without planning simultaneously the transport service if the town is sufficiently large to require one.

TABLE 4
THE LOCATION OF DWELLINGS IN SCOTTISH TOWNS INQUIRY
Convenience to Shopping Centres
Analysed by Distance and Time

Distance travelled to local shopping centre	House considered convenient		House considered not convenient		No answer		Total	
	No.	%	No.	%	No.	%	No.	%
Up to 600 yds. (¼ mile)	1731	97	19	1	32	2	1782	100
600 to 1,100 yds (½ mile)	216	76	55	19	12	4	282	100
Up to 1¼ miles and over (1 mile)	37		33		2		72	
No answer	73		3		12		88	
Total	2057	92	110	5	58	3	2225	100
Time taken to travel to local shopping centre								
Up to 12 mins. ..	1904	95	53	3	37	2	1994	100
13 to 22 mins. ..	67	57	47	40	4	3	118	100
23 mins. and over ..	1		6		1		8	
No answer	85		4		16		105	
Total	2057	92	110	5	58	3	2225	100

TABLE 5
THE LOCATION OF DWELLINGS IN SCOTTISH TOWNS INQUIRY
Convenience to Shopping Centres
Analysed by Distance and Time

Distance travelled to main shopping centre	House considered convenient		House considered not convenient		No answer		Total	
	No.	%	No.	%	No.	%	No.	%
Up to 600 yds. (¼ mile)	349	95	9	2	11	3	369	100
600 to 1,100 yds. (½ mile)	311	89	28	8	11	3	350	100
1,100 yds. to 1¼ miles (1 mile)	403	81	73	15	23	4	499	100
Up to 3½ miles and over	409	71	149	26	20	4	578	100
No answer	99	71	22	16	18	13	139	100
Total	1571	81	281	15	83	4	1935	100
Time taken to travel to main shopping centre								
Up to 12 mins. ..	790	89	69	8	26	3	885	100
13 to 22 mins. ..	563	80	113	16	30	4	706	100
23 mins. and over ..	124	60	71	35	10	5	205	100
No answer	94	68	28	20	17	12	139	100
Total	1571	81	281	15	83	4	1935	100

TABLE 6
THE LOCATION OF DWELLINGS IN SCOTTISH TOWNS INQUIRY
Convenience to Place of Work
Analysed by Distance and Time

Distances travelled to work	House considered convenient		House considered inconvenient		No. answer		Total
	No.	%	No.	%	No.	%	No.
Up to 600 yds. (¼ mile) ..	231	97	1	1	5	2	237
600 to 1,100 yds. (½ mile)	150	93	6	4	6	4	162
1,100 yds. to 1¼ miles (1 mile)	153	85	22	12	6	3	181
1¼ to 3½ miles	207	65	93	29	17	5	317
Over 3½ miles	84	44	92	48	14	7	190
No answer	39	—	10	—	31	—	80
Those who travel to work	864		224		79		1167
Time taken to travel to work							
Up to 12 mins.	440	93	14	3	19	4	473
13 to 22 mins.	227	76	57	19	16	5	300
23 to 40 mins.	116	58	74	37	19	5	200
Over 40 mins.	36	34	65	61	6	6	107
No answer	45	—	14	—	28	—	87
Those who travel to work	864		224		79		1167

As well as the studies which have been made to establish planning principles there have been many studies designed to solve the planning problems of particular areas like those being made in Birmingham and Manchester at the present time and like the study already published of Birmingham—"When we Build Again." This study with its limited objectives has thrown light

TABLE 7.—WHEN WE BUILD AGAIN

Percentage of Children Playing in Various Places in Fine Weather

Schooldays

Zone	House	Yard	Garden	Street	Waste Ground	School Play-Ground	Recreation Ground	Park	Combination of foregoing	Elsewhere or no play
	%	%	%	%	%	%	%	%	%	%
Central Wards ..	12.4	20.3	3.8	18.9	0.2	0.3	2.4	4.3	31.9	5.5
Middle Ring	20.6	5.3	8.6	13.9	—	0.9	0.6	5.6	37.0	7.5
Outer Ring	24.3	1.1	17.3	13.0	1.1	0.3	0.5	1.8	30.9	8.8
ENTIRE CITY	20.6	6.6	12.0	15.0	0.6	0.4	1.0	3.3	32.6	7.9

Week-days and Holidays

Zone	House	Yard	Garden	Street	Waste Ground	School Play-Ground	Recreation Ground	Park	Combination of foregoing	Elsewhere or no play
	%	%	%	%	%	%	%	%	%	%
Central Wards ..	3.2	20.1	3.2	16.4	—	3.2	1.6	12.2	30.0	10.1
Middle Ring	10.2	4.5	10.2	12.4	—	—	—	4.0	41.8	16.9
Outer Ring	11.7	—	18.5	8.6	0.5	—	1.6	7.0	39.0	13.1
ENTIRE CITY	9.4	5.7	13.1	11.2	0.3	0.7	1.2	7.5	37.4	13.5

on a number of important problems, particularly that of the relation of work places to home and to take one example the study of the use of parks and recreation grounds in the different zones of the city must be most illuminating to the planner.

Using the experience gained in the Scottish inquiry and that of the town surveys mentioned above, the Wartime Social Survey has planned an experimental survey of a northern town in conjunction with a planning consultant. This survey is studying three main problems—a detailed study of family patterns made, as far as we know for the first time, which will be the basis for housing provision, a study of communities based on the social relations between neighbours (a pilot survey on these lines has already shown that in some areas of the town these social relations are considerable and play an important part in the lives of the people) and a study of activities, the relationship of places to the home and of convenience. The study of communities includes a study of the town as a whole. (*See Table 7 above*).

Studies of the Objective Factors in Housing Problems

The studies already described of the dynamics of family life in the home and community demand corresponding objective studies of the environment, the size of rooms, the amount of light available and studies of equipment and appliances, as well as studies of possessions.

The Wartime Social Survey has already carried out a number of such studies for the Building Research Station and for other Government Departments. These studies include the following made for the Building Research Station :

The Heating of Dwellings Inquiry—this was a study made of the use of fuel in dwellings for heating and cooking and water heating, together with an inquiry about attitudes to district heating and alternative schemes of heating and water heating.

The Lighting of Dwellings Inquiry—this was a study of domestic lighting by daylight and by electricity.

Noises in Dwellings Inquiry—this inquiry, which is still being worked upon, has been successful in demonstrating that opinions about noise and the disturbance caused by noise is a useful guide to the architect and the table already seen illustrates the kind of results which are being obtained.

TABLE 8

HEATING OF DWELLINGS INQUIRY

Length of Time Rooms were Heated on Weekdays in February and March by working class families

No. of Hours	Kitchen living room	Sitting Room	Bedroom
	%	%	%
Unheated	—	—	87
1 hour or less	1	11	6
1-2 hours			3
2-4 hours			2
4-8 hours	4	15	1
8-10 hours	7	10	2
10-12 hours	20	19	
12-14 hours	37	29	
14-16 hours	25	13	
Over 16 hours	9	6	
Sample	3788	1193	5083

In addition to these main studies a number of studies of detail have been carried out in conjunction with other inquiries. They include studies of coal buying and the use of coal storage space, the ownership of bicycles and the use of windows. This latter study which is part of the social anthropology of the home will be interesting to architects when combined with further experimental data. At present windows are designed to provide certain standards of illumination, but until we know precisely how many windows are obscured by furniture, by plants and flowers, by figurines of little girls, the amount of the window which is obscured by net and by curtains, the ultimate illumination cannot be estimated.

Some examples of the data obtained in these types of surveys may illustrate their value, for example in planning for heating existing habits need to be known and information like the following for kitchens sitting room, sitting rooms, and for bedrooms will be of immediate interest. (*See table 8 above*)

Possibly the most ambitious study yet made was that of domestic lighting. In this study the house was visited and the housewife was asked to co-operate in the study of domestic lighting by allowing observations of daylight to be made and then by allowing

TABLE 9.—LIGHTING OF DWELLING INQUIRY

Meter Readings

	Sink				Cooker				Scullery Table			
	Unshadowed		As Used		Unshadowed		As Used		Unshadowed		As Used	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Up to 1 foot candles	1107	54	1642	81	937	45	1595	76	631	37	1056	62
Over 1 up to 2	469	23	224	11	544	26	268	13	453	27	317	18
Over 2 up to 3	215	11	87	4	306	15	122	6	258	15	146	9
Over 3 up to 4	136	7	49	3	166	8	70	3	192	11	108	6
Over 4	107	5	32	2	140	7	38	2	175	10	82	5
ALL READINGS	2034	100	2034	100	2093	100	2093	100	1709	100	1709	100
No such room	—		—		—		—		202		202	
No answer	332		332		273		273		455		455	
SAMPLE	2366		2366		2366		2366		2366		2366	

	Kitchen living-room table				5 ft. from Kitchen Living-room Fire		5 ft. from Sitting room Fire	
	Unshadowed		As Used		Unshadowed		Unshadowed	
	No.	%	No.	%	No.	%	No.	%
Up to 1 foot candles	152	22	274	40	118	8	46	5
Over 1 up to 2	66	10	86	12	90	6	80	9
Over 2 up to 3	78	11	92	14	183	12	112	13
Over 3 up to 4	128	19	95	14	281	19	147	17
Over 4	261	38	138	20	809	55	481	56
ALL READINGS	685	100	1481	100	685	100	866	100
No such room	471		471		471		604	
No answer	1210		1210		414		896	
SAMPLE	2366		2366		2366		2366	

measurement of the amount of artificial light available in the main working positions in the kitchen and in the sitting room. For this purpose it was necessary to lower the blackout and to persuade the housewife to take up her normal washing up, food preparing and cooking positions. Comparative studies of the amount of light available at say the sink or kitchen table were made with both the housewife in the work position and with the place unshadowed. In addition to these measurements, measurements of the main dimensions of the room were made and the type of fitting studied and the colour of the walls in order to work out utilisation factors. In this experiment 2,375 housewives participated and only a handful refused co-operation. The table above which shows the amount of light available in various positions in the kitchen and sitting room illustrates the sort of results which can be obtained by this method and are a guide to current standards which must be considered when replanning for better lighting. (*See table 9 above*)

Wartime Social Survey

The Wartime Social Survey, whose work has been mentioned many times in this paper, is a Government Social Research Unit, which has a department specialising in surveys of housing and planning. It does not at the present time initiate its own surveys, but only carries out surveys at the request of other Government Departments.

It has been suggested—as recently as last week in the *Architects' Journal*—that the social survey method is hampered by unwillingness of the public to co-operate. This is an extraordinary misconception. The experience of the Wartime Social Survey in what might be described as a quarter million "sorties" is that the proportion of people who do not co-operate is less than one in two hundred and in considering this figure it should be borne in mind that people in houses are sometimes ill, that they may have urgent cooking or shopping to do and that such reasons of inconvenience are the main ones for this handful being unable to co-operate. The survey has found that if an adequate explanation of the purpose of an inquiry can be given it is readily appreciated and even an inquiry which demands the co-operation of a housewife for say two hours, as did the lighting inquiry, requires her to carry out a number of additional tasks like raising and lowering the blackout and going through with certain domestic jobs like washing up or attending to the cooker, even this amount of co-operation is freely and willingly given. The survey has found that the housewife and the man of the house too is willing and anxious to co-operate in any scientific experiment designed to improve housing and to assist planning.

The Social Survey's Contribution

It must be clearly understood that the sociologist is not an architect and cannot himself either design a house or plan a town and that the best that he can do is to work with architects and planners and supply them with certain basic data. On the other hand it ought to be recognised by the architect that the sociologist is a specialist in his own line and that he has a contribution to make to what is after all mainly a sociological problem and that equally the sociologist should be allowed to design his own experiment. Once this division of function is clearly understood on both sides there should be fruitful co-operation between specialists.

DISCUSSION

The vote of thanks to Mr. Chapman was proposed by Mr. M. Hartland-Thomas [*F.*] and seconded by Dr. J. J. Mallon, Warden of Toynbee Hall. In the discussion which followed, the following took part: Mr. W. A. Allen [*A.*] of the Building Research Station, Mr. J. Craven Pritchard, Mr. A. H. Moberly [*F.*], Miss Robinson, of the Society of Women Housing Managers, Mr. Alastair G. MacDonald [*F.*], and the Chairman. Mr. Chapman replied.

SCIENCE AND HOUSING

By A. M. CHITTY, M.A., F.R.I.B.A.

Technical Officer to the Interdepartmental Committee on House Construction (The Burt Committee).

A PAPER READ AT A MEETING ARRANGED BY THE ARCHITECTURAL SCIENCE BOARD AND HELD ON TUESDAY, 13 JUNE, 1944.

When the Architectural Science Board asked me to speak on Science and Housing, I accepted with some diffidence, being expert in neither of these two huge subjects. I mention this as it occurs to me that there will be many other architects who will feel, as I do, that the greatness of this subject will increasingly fill our minds and absorb our energies during the coming years. So it is not as a teacher or exponent that I am here, but in a spirit of inquiry, raising questions to many of which there are at present no clear answers. This point of view will also be my excuse for developing here and there, without further acknowledgment, ideas which owe their existence to the writings of such authorities as Lewis Mumford, Catherine Bauer, Bernal, and Whitehead.

The application of Science to Housing is only one aspect of its general application to the wider reaches of building technology. We live at a vitally important point in time, the turning point of the technician from an hereditary and oral and local tradition of handcraft towards a newly evolving tradition of machine craft. A change, so fundamental in character, when accomplished in so short a time, a mere hundred years, must of necessity be hard and painful. With consumer goods the change has been rapid and easy—it hurts little to throw away the flat-iron or the phonograph and replace them with more up-to-date conveniences. But with building, this process has been difficult and slow. The past history of the building industry is of a large number of parochial and discrete units relying for their skill upon hereditary and oral instruction passed on from father to son, from master to apprentice. This machinery has been disjointed by the development of transport and communication, but the small units remain, untrained and unprepared for the advent of the scientific method in building. The means by which to bridge this gap has not yet been devised.

Past speakers in this series of lectures have covered two aspects of scientific building. Three recent subjects, timber, welding, concrete formwork, have exemplified particular applications of the scientific method to special subjects. Then the lecture on the "Influence of new constructional developments on architectural design" approached the subject from the philosophic and directive angle. In the region between these two extremes lies the field of this present subject : that is, the impact of applied science upon a variety of familiar experiences in the everyday business of living.

Together with food and clothing, shelter is the greatest necessity of mankind on the material plane, and finds its expression in the house, which therefore occupies a central position in the whole of our economy. Since some 90 per cent. of the buildings in any urban community are dwellings, it is clear that a balanced and proficient knowledge of housing is essential to any attempt to plan our national life. "The socialised provision of houses, in integrated neighbourhood units" is the economic foundation for the city of to-day.

Yet looking around us, the most casual glance shows the inadequacy of our arrangements. The vast benefits of science, invention and production methods, have improved and cheapened the material objects of civilised life in almost every direction, but with the exception of a few pieces of specialised equipment, the house itself, the centre of the whole complex social system, has scarcely been touched by these influences. "Houses tend to outlast the habits and possibilities of those that live in them, and this is further emphasised by the almost universal tendency of allowing the poor to live in the discarded houses of the rich." To-day even the finest urban dwellings of past centuries are, on the whole, osbolete. Few of them even by the most drastic and expensive renovation and adaptation can meet the requirements of to-day. Such adaptation may provide a degree of shelter, but by no means the framework for living. The reason is simple : such dwellings were designed for a mode of living which is dead and gone ; for a way of life more limited and confined than ours ; for a different ritual and for other needs.

What are the particular needs of to-day ? They are : First, our desire to avoid unnecessary menial labour ; second and linked with this, greater space for the better use of the leisure thus gained ; thirdly, our more conscientous and efficient care of children, and with it the sense of the importance of play as a basic factor in life from childhood onwards ; fourth, our increasing need for privacy and quietness and physical ease in the racket of an industrial world. Such requirements demand a different type of dwelling and different social disposition. As Mumford says : "In many ways we have already crossed the threshold of a new age ; but our housing remains behind, clinging to dreams that no longer satisfy, making a parade of sickly archaic tastes, attempting to meet conditions that no longer exist, and failing to take advantage of conditions that do exist and promise far more by way of human reward. Even much of the new housing done by both public bodies and private building exhibits only a stuccoed modernity over an obsolete form."

And here I want to stress the significance and real danger of the change that has taken place. With the increasing possibilities of knowledge and experience to-day, we are at the same time menaced by the evil of over-specialisation, "the danger that outstanding minds may work in grooves with a celibacy of intellect which is divorced from contemplation of the complete facts." By this habit the directive force of reason is weakened and the leading intellects lack balance. The lesson that we may learn from this in the housing field is that no single spectacular advance in technology is of value unless integrated with other developments. To look for satisfactory housing in terms of planning or construction alone is not sufficient. Geographic, social, technical, personal, economic factors must all be considered on a single plane. From this it will be seen that there is no simple solution to this problem, the problem of the house, which is a highly complex adaptation to an exceedingly varied set of difficult requirements.

Since the provision of proper housing is, in the national sphere, largely an economic problem, we see at once the uselessness of applying the scientific method to the house without examining the finance of housing from the same point of view at the same time. For example, I for one believe that much greater space is required for proper living and family conditions than heretofore ; but the provision of such extra space is futile if the occupant cannot afford to pay increased rent and must take in lodgers to do so. In just the same way, full and proper attention must be paid to the reform of our retrograde system of rating, and to such anomalies as the fact that the largest single factor in house rent is the cost of moneylending.

A word must be said here on the increasing cost of the house and the physical changes that have been responsible. The nature of the house has been changed very largely by the introduction of machinery. The mediæval house was a completely isolated

unit standing in its own plot. To-day this physical isolation has been broken down, and every house is part of a larger unit linked to it by every kind of common service, roads and pavements, water, drains, power, telephone and so on. The dividing line between public costs and occupier's costs grows year by year more difficult to draw. Housing is clearly becoming a public utility similar to those other services for which we accept public responsibility. In 1935 one-fifth of the housing in Europe was publicly owned or administered, and doubtless this proportion will increase.

Such increases in public services have meant increasing cost, for the house that was once a mere shell has now become a complicated organism, whose equipment may be as much as 40 per cent. the total cost to-day. Similarly, the cost of space within the shell is to-day relatively cheaper than it was. A Ministry of Health survey of housing costs in 1933 showed that a 14.5 per cent. increase in floor area increased the cost by only 6 per cent. No doubt this tendency will increase.

Construction

After these general remarks we come to the main part of this talk, which is concerned with the application of the scientific method to house construction. This subject has been dealt with in the recently published Report of the Burt Committee, Part One of which is something of a milestone in the history of housing, because it sets publicly for the first time the problem of the house in terms of numerical standards. Up till now legislation on building has tended to lay down materials and dimensions, which, has, of course, given rise to many anomalies. These were later overcome by relaxation and waivers from the more distressing absurdities, and by making wording more flexible. This naturally led to the human difficulties of local interpretation by a variety of persons of differing training and qualifications. Now, however, the proposal is to set standards of performance judged on a scientific basis, and within this new framework it will be possible to fit the wealth of new material and knowledge that increases year by year.

I take here some of the Burt Committee's performance categories and to these have added some further ones, so that we may see briefly what is proposed and what further steps might be taken in the near future.

Strength and Stability

The first and most obvious characteristic required in house construction is, of course, strength and stability. So important s this that already we have in existence a well-defined minimum standard under various bye-laws and local legislation. Closely supporting such legislation are the various British Standard Specifications covering objects, materials and methods.

One of Kipling's characters made the penetrating observation : " The British think weight's strength." This misconception dies hard ; in fact, it is as yet very much alive. The massive monuments of Dartmoor, the prodigious bulk of Stonehenge, the vast fabric of Durham Cathedral, this is a tale of huge redundancies. It is not till the " age of reason," the eighteenth century, that this blind empiric tradition gives way to slenderness and calculation, and architects begin to foresee the application of the scientific method to building construction.

The Burt Committee puts forward suggested minimum loadings, giving figures for dead loads and superimposed loads ; strengths for parapets and balustrades ; figures for wind on vertical surfaces with variations for sheltered or exposed location ; loadings for flat and pitched roofs, including provision for the effects of suction ; strengths for roof coverings.

Such provisions are elementary, but necessary. They take the design of structures a step further, and will, no doubt, in the course of time be adopted and become mandatory. Perhaps the most significant example of the application of the scientific method to the design of structures was that so clearly drawn in Mr. Reece's lecture here recently on " Timber Structures." Here we saw how the oldest and most familiar of English building materials has entered upon a new life. Empiric experience, together with the clear light of scientific analysis, have produced a new code of practice for wooden structures, showing how the intrinsic characteristics of wood can be used with efficiency and economy. Stress grading, lamination, adhesives, and mechanical joints were developments in the process.

And what further developments can science bring about in this category of strength and stability ? " The main principles of architecture are just beginning to feel the effect of the revolution introduced by new materials and new processes. It will soon be possible to break altogether with conventional architecture, with its tradition of putting stone on stone or brick on brick unchanged since the time of the Pharaohs, and move in the direction of rational fabrication. The physical functions of architecture are principally insulation and support, but these are perfectly separable factors. Thick walls and heavy girders are a most inconvenient way of providing both together." There is now room for considerable thought and investigation into weight/strength ratios of various materials, particularly in the new and vast field of light metals.

We should not forget that aluminium is the most abundant metal on the earth's surface. The 10-mile crust of the earth is 8 per cent. aluminium against 5 per cent. iron. Magnesium is another important metal in this class to be explored, being of greater strength than aluminium for less weight. Closely allied to the use of light metals is the study of corrosion. With heavy steel structures hundreds of thousands of pounds are spent annually on preservation by painting, lacquering, galvanising, and other treatments, but in spite of this, it is estimated that the annual wastage by rusting is 20 per cent. of the annual output of iron. The problem of corrosion becomes more acute with light metals used structurally, since the margin of safety may be reduced thereby. Interest in this sphere may centre on surfacing technique such as anodising and the Alclad method.

A closer study of the flexibility of materials is also overdue. We see around us to-day very many examples of defects due to the movements of building elements of dissimilar flexural capacity, and research into this subject might help us to classify such materials as a guide to safe combinations.

Calculation of the strength of welded structures is a further development in this category, and this is already assisted by the use of X-rays for internal inspection of welds under test. One of the most striking illustrations of the scientific method applied to structures is the use of polarised light, together with models of isotropic materials such as celluloid in analysing the internal stresses in structural members of irregular shape.

Further experiments will cover the strength of jointing materials (such as mortar in brick walls) and the properties of adhesives.

Moisture Penetration

The next category of shelter is the prevention of moisture penetration. As to degree, all that can be said is that prevention must be 100 per cent. How to achieve it is an interesting dilemma. In the history of English building to date, great reliance has been placed upon the principle of the lapped joint, and also upon acceptance of a certain degree of penetration through material deficiency offset by a second line of powerful defence. This principle is exemplified in the 11-in. cavity brick wall, and also in the patent glazing bar. It is also seen in roof tiles lying upon waterproof paper. Such methods may be effective as regards a penetration of moisture, but they are somewhat inefficient by scientific standards, and result in a redundancy of material and labour costs.

The other solution to this problem is to provide an impervious macintosh admitting no penetration at all. Cement renderings, metal and asbestos cement sheathings, faience facings, are attempts at solution by this means, but woe betide a failure of this means ! The lecture on " Weathering " by Mr. Brady dealt fully with this problem. Many of the proposals now being made for prefabricated structures attempt the impervious macintosh type of covering, and the success or failure of this approach turns largely on the design of and material for the jointing. The more impervious the cladding, the more vital the

joint becomes. In considering such schemes, it is important to remember that the less efficient characteristics of masonry construction have been offset by very considerable safety factors, for example, the porosity of the outer skin of an 11-in. cavity wall of common bricks is balanced by the very great moisture barrier of the 2 in. airspace. The same can be said of the Scottish principle of strapping. When leaving older methods of construction behind, therefore, we should not forget these safeguards which have been evolved over centuries by men no less competent than ourselves.

The other factor in the category of moisture penetration concerns condensation. By the scientific study of first principles, the causes of condensation are now well known, and the cure lies in the proper heating and ventilating of buildings, the reduction of the thermal transmittance of the fabric, and the provision of internal linings of low thermal capacity. We may expect developments in the form and substance of the latter, and in the temperature control of wall, ceiling and floor surfaces.

Thermal Insulation

The next category is Thermal Insulation, and perhaps this is the most important single development of our time. It is also, I think, the subject with most significance for the future. Professor Bernal in his book "The Social Function of Science," says: "Given good insulating walls, the problem of heating houses entirely disappears. Indeed, even in winter, the heat generated by the inhabitants of the houses would require some method of cooling to get rid of it. To secure this degree of self-sufficiency, however, it would be necessary to devise a rational ventilation system which did not, as at present, take in air cold and send it out hot, but arranged for the outgoing hot air to warm the incoming cold air in winter time, and *vice versa* in summer." He adds that already reversible heat engines which would pump heat into a house in winter and out in summer have been run on one-third to one-fifth of the cost of direct heating methods.

Returning to insulation, the key to any such developments, we find the Burt Committee proposing maximum values of heat transmittance for walls, floors, and roofs of houses. If such standards be adopted, there would be a considerable saving not only in tenants' fuel bills, but also in solid fuel itself, hitherto this country's greatest natural resource. This latter aspect is of very great importance, not only in wartime, but also in the peace to follow. Of all the raw materials at our disposal, coal has probably been more wastefully used in the past than any other. It is estimated that domestic fires are only 15-25 per cent. efficient. We cannot in the future afford to waste the richness of raw materials in this way.

The history of heat insulation in English house-building is from good to bad on the whole. The massive masonry constructions of the past had certain values of insulation which declined with the development of more slender construction, with thin concrete walls and larger areas of glass, with plywood doors and stud partitions, with materials such as asbestos cement and plasterboard. I visited recently a house in Edinburgh built (in 1925) of studding clothed each side with pressed metal no thicker than the structure of a biscuit tin. The outer metal was pressed to look like rubble walling, the inner to look like linenfold wood panelling. The insulation value of such a wall would be about 0.5, exceedingly low compared with that of an 11-in. cavity brick wall. The occupant told me that in spite of huge fuel bills, three years of life in this house had nearly killed him.

Now that science has enabled us to analyse the physical characteristics of building materials, we can preserve the efficiency of a slender and economic structure and use suitable insulators as coverings and fillings to reduce the transmittance as required. Released from the need for carrying loads, the wall panel can now be perfected as macintosh, insulator and interior finish, performing if expedient all three duties at once in sandwich form.

The importance of the Burt Committee's suggested transmittance figures is not the fact that the standards are somewhat higher than would be obtained with normal brick house construction. The importance is the suggested application of a scientific and numerical basis to such an important aspect of housing. From this point the way lies open to a variety of developments; the study and development of aerogels, a matter for scientists; the improvement of equipment to permit of fully controlled heat output (this is a study at present closely engaging the attention of manufacturers); the use of reflective surfaces and colours for insulation; the scientific study of comfort in the widest sense, including gland reactions and other physiological phenomena (this is a study for doctors and represents a considerable gap in our knowledge); the reduction of heat loss through windows and other openings.

Lastly, the promising investigations at present being made into low thermal capacity linings. For example, consider a country house with a dining-room lined, we will say, with wood panelling upon a masonry wall. Such a room may be heated up to a comfortable temperature in half an hour, whereas a similar room without the panelling may take two hours to reach the same temperature. When the room is only used for perhaps an hour at a time, the importance of such linings is obvious.

Sound Insulation

What can we say on the subject of sound insulation? Again we suffer to-day from the same defect as with heat losses. The increasing tenuity of modern construction has reduced the resistance to sound both impact and airborne, and little has been done to counteract this difficulty. At the same time, the sources of noise to-day have multiplied greatly, and increased in volume. Two hundred years ago the most common sources of noise were the horse's hoof, the cries of men and beasts, and the village blacksmith's anvil. To-day we add to these the roar of traffic, the radio, and not least formidable, the sound of aircraft.

This subject has, perhaps, been less far explored than other aspects of housing. Perhaps the reason for this is that whereas the dangers and effects of not taking adequate precautions against such things as fire and collapse are obvious to all and immediately felt, with sound problems the results of bad conditions are only experienced over a long period. Scientific research in the future will doubtless enquire into the ill effects of noise upon health and efficiency, and thereafter we shall appreciate the full importance of this aspect of building.

Fundamental Research

These two last considerations, sound and heat insulation, serve to illustrate clearly the importance of pure science and fundamental research as the constant background and inspiration of good building methods. In any planned scientific progress, it is essential to keep a proper balance between fundamental and applied science, and to preserve close contact between them at all stages. To-day this balance and contact is nowhere more essential than in fields such as building and town planning, where our exact knowledge is only just beginning. It has been my good fortune during the past year to work with and learn from the officers of the Building Research Station and other branches of the Department of Scientific and Industrial Research, and I have a lasting impression of the important part played in the development of building knowledge by the skilled scientist, unseen and unsung, whom we should not forget.

Ventilation

Under the heading of ventilation and pure air generally, the most important single problem is that of atmospheric pollution. I do not need to repeat the wealth of arguments against the present method of burning raw coal in open grates. They are well known. Here, again, our standards have dropped since an earlier age. In the Middle Ages, a champion of the open hearth was tried, condemned, and executed for burning coal in London. Queen Elizabeth also prohibited the use of coal in London for a period, and Charles II imposed a fireplace tax. Somehow we must return to sanity, and clear the darkened reaches of the sky. At present we are throwing away an appreciable proportion of consumable

materials, and doing so in a way that destroys health and the amenities of town and countryside alike. As much corrosive sulphuric acid goes into the air with smoke in a year as is produced by the whole chemical industry in that period. Only an enforced use of smokeless fuel, pending a reorganisation of domestic heating can remedy this nuisance.

Ventilation is closely allied to heating, and we have already spoken of the possibilities of applying a reversible heat engine to the internal air condition. There is a field of research here into district ventilation and to district heating. Nothing could be more primitive than the present arrangement, by which the odour of cooking and in many cases the products of combustion also are allowed to fill the kitchen and often the house as well.

Lighting

Lighting is a consideration of great importance in housing, as in all types of building ; and we may briefly mention the main lines upon which research has been going and still might go. The Burt Report does not make comment on this subject, which has already been fully dealt with in this series of lectures. As to daylight, we are learning that rules can be established governing the relationship between penetration of daylight into rooms, the height of buildings, the space between buildings, and the plan shape of buildings. The further study of this subject will have great impact on such aspects of town planning as density, coverage, height, siting, and skyline. Once again we see here the importance of control over the use of land. The improvement of habitable conditions in urban areas by such a study would be enormous, and from a technical point of view, there is no longer any excuse for empirical methods and their fortuitous results in the lighting efficiency of buildings.

As to artificial lighting, much the same applies, and the lectures we have heard here on this subject show clearly the broad field for applied science following closely on the indispensable and continuous pre-stages of laboratory study. The next moves in this field are perhaps : the grading of intensities for various domestic purposes, freedom from the single-light source, that carry-over from the candle on which Mr. Hartland Thomas was so interesting—this trend has made strides during the war in the form of fluorescent tubes. The uses of infra-red rays for the relief of pain and the promotion of circulation ; of ultra-violet rays for reactions on the bloodstream and the supply of vitamin D. The study of luminescent paints for storing daylight. The use of photo-electric cells for a variety of domestic operations, such as controlled cooking, opening and shutting of doors, control of ventilation, and many other activities. There is also the field of street lighting and the application of light to the stimulation of plant growth in the garden and allotment.

Our friend the firefly emits a light that is 97 per cent. light and only 3 per cent. heat, and it is towards this high degree of efficiency that we are proceeding slowly by way of the hot and cold cathode discharge tube and light sources activated by fields of energy rather than by cable current.

Nor should we forget that where lighting, both natural and artificial, are concerned, our aim is always to conserve and to preserve the most valuable of human senses, eyesight.

Fire Hazard

The subject of fire hazard is an interesting one. It has always seemed to me that fire has been a particularly English enemy, and that through it we have learnt our lesson. English history is full of fires—most of the great towns and cathedrals have been consumed at one time or another, and many a number of times. The tale of burning culminated with the Fire of London and the Great Fire of Tooley Street (1861), and to such episodes as these we can attribute the unique provisions against fire that exist to-day. The architect who sets out to plan a cinema or theatre in London will find that, practically speaking, it is designed for him by the fire regulations. It is for this reason mainly that we do not have those disastrous fires which occur in the public buildings of other capitals. Our fire legislation, our administration, our equipment, our personnel, are outstanding, and already we are beginning to see in true perspective how much we owed to this fire-fighting tradition when, in this war, the City of London was again in flames.

The Burt Report sets out three classes of risk : personal, structural, and exposure and time resistance figures are suggested ; two hours for party walls, half-an-hour for steelwork, and so on. These figures are combined with detailed information on particular elements of construction. Such figures are, of course, based on careful observation of tests made over many years at the Fire Testing Station.

For the future one may hope for increased facilities here to examine more closely and build theory in connection with the prevention of flame-spread on surfaces, the isolation of units, the fireproofing of timber, plywood and textiles, and improved methods of quick extinction. Methods of dealing with burning aircraft during this war should add considerably to the sum of this knowledge.

Durability and Maintenance

The last category to be dealt with in the construction field is durability and maintenance. This is left to the end because of its difficult complexity. Of all the aspects of building construction, it has been least considered, and its problems call out loud for the attention of scientific minds. The subject is so large that we can only raise some questions that require study in the future.

No study of durability can be made apart from consideration of first cost, maintenance cost, and intended length of life. The " good house " is an equation of these factors. At once, we see that the present distinctions between " permanent " and " temporary " housing are loose to the point of being meaningless. The all-important question is " how temporary ? " Experience shows that over-permanence of structure has been a contributory factor in the making of slums and blighted areas. The structure has outlived its social usefulness. On the other hand, excessive mobility is equally vicious—as is shown in the life of the bargee and the American war-time caravan slums. Where, then, shall the line be drawn ?

It is interesting to note that at a recent meeting between P.E.P. and the Modern Architectural Research Society, the following view was recorded : " It is not possible to provide dwellings that are at the same time satisfactory when erected, and *structurally* of short life." War-time industrial building supports this point of view. If this be true, as I believe, we must examine more closely the alternatives in view.

The life of buildings depends upon two factors : (*a*) social obsolescence, and (*b*) physical decay. The two are closely joined together, and can hardly be discussed separately.

(*a*) *Social Obsolescence :* On the subject of social obsolescence, all that we need consider at this moment is : That it depends upon the rate of social and economic change which at the present time is increasing in momentum. Much of the working-class housing built prior to the last war is now socially obsolete. The period of social obsolescence is likely to remain short for many years to come until such time as a comparatively stable society has evolved. The period may then perhaps increase its span. Housing built during the next decade or two may fall under this influence, and may have only a short social life. The question, therefore arises : Do we really want permanent houses ? Houses which will become obsolete in a shorter time than ever before ?

(*b*) *Physical Decay :* Different parts of a house decay at different rates. There is a growing differentiation between these parts, the shell and the mechanical core. Should we bring the shell more into line with the replacement capabilities of the service core ? Would a permanent skeleton with replacement parts attached thereto be a solution to enable social amenities to be maintained in spite of the tempo of change ? Is it not a much greater degree of flexibility in planning and construction that is needed in order to preserve these living amenities ?

The growing importance of services and equipment in the house is obvious. Looking back over the years we may estimate its importance like this :

In the year 1300	..	Nil
In the year 1700	..	1 per cent.
In the year 1940	..	30 per cent.
In the year 2000	..	60 per cent. perhaps

It is clear that the long life of old dwellings without social obsolescence was due to the small importance of this mechanical core in those days. With the increasing importance of this element, replacement possibilities become much greater, and it may be possible to adopt for the major part of the house some really flexible system of replacement and renewal of all the elements, including shell and core, at a low annual charge. This system is already successfully adopted for many consumer goods, for instance, cars and the tyres for motor buses.

To line up with the replaceability of the core, the shell might consist of standardised and easily detachable high performance panels for the external and internal walls, which could be adapted with great ease, and would at the same time have a high salvage and renewal value. Again, do we not see that the designations "permanent" and "temporary" are not sufficiently close definitions for the purpose ?

Finance

At this point the question of the finance of housing enters the picture. The present rigid financial system, which dictates the period of life of the house, will scarcely fit for the categories of permanence are simply suitable amortisation periods for the loan. This, again, is a sphere where science and the scientific method can play a part aside from the prejudice of modern practice. This is a matter for modern-minded economists. In this connection do not let us forget that housing is primarily an economic problem ; we are clearly reminded of this when we remember that a reduction of 2 per cent. in the cost of money gives a far more decisive saving than any cheeseparing of size or prefabrication methods. When we speak of the economies to be made by improved constructional technique, we are apt to forget that these economies will have a minor effect upon rent. The predominating factors in an inclusive rent are rates and finance, which in some cases amount to two-thirds of the rent. My suggestion is that if economists investigate this problem with an open mind and properly advised at the same time on the construction possibilities, we may find it possible to work out a flexible replacement scheme of the kind I have sketched, which results in lowered rents and is still in harmony with existing finance arrangements.

Services

We have already noticed the growing importance of public services both in linking the house to the larger social unit, and in bringing about changes in the house itself. Under the heading of services there is still a vast amount of research and development to be done. The proper development of these services has lagged behind, chiefly because this is not a profitable field for speculation and investment. The field is too wide to survey in detail to-night, and mention will be made of one only of these services —water supply.

Water : Water supply is the most important house service, and strangely enough, its development is more retarded than that of the other services. Water is still regarded as a commodity to be used sparingly, an absurd state of affairs in a country where the rainfall after allowing a 40 per cent. loss by evaporation, is still 15 times the greatest possible demand. It is estimated that the Romans used more than twice the quantity of water per head of the population than we do. A cheap and plentiful supply to every household is essential, and is at present only prevented by parochialism and distribution problems. It is important that a national utility of this kind be administered on the broadest basis, and present proposals on the subject scarcely touch the fringe of this problem.

In a community water should be sold and developed in much larger volume as one of the least expensive contributions to higher living standards. It is said that more than half the value of all waterworks in the country lies buried in the elaborate system of distribution pipes, valves, hydrants, meters, and other accessories. It is also estimated that in communities of 100,000 and over, at least half of the investment in the average waterworks is justified by the fire protection it provides. It will be seen from this that the present cost of water (which is much the same as your bus rides to work or your daily papers) could and should be reduced considerably. In fact, I have no doubt that eventually both water and power, like sewage disposal, will become free of a quantitative charge, and subject merely to a general rate under public administration.

There is a field for research and improvement in this subject. I have no British figures for water losses, but in America before filtration was introduced, there was a 23 per cent. loss of carrying capacity in the first 20 years of use. Since filtration became widespread this loss has been greatly increased, and in some cases doubled. There are comparable losses in consumers' plumbing systems. Present technology, if we so wished, could materially reduce these appalling losses. Another field for investigation and reform is the purification and softening of water. We do not know accurately the damage done to health and life by varying conditions of water supply. It is possible that eventually all houses will be supplied with both hard and soft water supplies.

Of the other house services not already mentioned, we can only deal very briefly and in note form :

Sewage : In the disposal of waste material science will also play a larger part in the future, and the archaic dustbin system must be modified. Of still greater importance is the scientific reclaim of sewage for agricultural purposes.

Communications : In communications the most obvious next step is television. The use of what is called "intercomm" is already of value in the more complicated communal activities in schools and offices, and has its application also in the domestic sphere. Presumably we shall see a great extension of this form of communication growing out of war-time experience with short-wave telephony.

Power : As to power and fuel, we have already spoken of the wasteful use of coal for burning in the open grate, with the consequent high loss of valuable by-products. Presumably there will be outstanding developments in the production of cheap power and in the separation of radiant from convective types of heating.

Science and Design

No consideration of science in housing would be complete without some reference to design. What part can science play here ? Science has given us and is giving us the physical key to reconstruction in all its phases : by design I mean the imaginative synthesis we can create from this material. Briefly there seem to be three tendencies in design to-day, and in each of these science will play an important, though at first unseen, part.

(1) First, on the material plane : we seek always economy. Economy of labour, economy of material, economy of time. The role of science in this sphere has been made plain in the consideration given above to construction. The Victorian atmosphere of conspicuous waste (indeed, the whole system upon which it rested) is shown to-day to be absurd, unworkable, disastrous. The disasters brought upon us are at this moment forcing us into a better way of living, a way of living directed by principles of economy and made workable by rational and co-operative control. The chief virtue of economy is, of course, as a means to an end : to set us free to address ourselves to the more

important values and activities of life, art, study, recreation, expression, and social practice. Let us hope that the increase in leisure hours will find us better equipped to use it than in the past.

(2) Second, on the meditative plane : the chaos that surrounds us, to which we open our eyes afresh each morning, that oppresses the soul throughout the working day, that wakes us in our troubled sleep ; this social tragedy is gradually teaching us the value, and essential need for serenity in our surroundings, and for legibility in design. The part of science in this tendency is largely an indirect one, the unseen background to creative and imaginative thought.

(3) Third, on the social plane : we saw just now how the house, originally an independent unit in a community, has now become a cell whose efficiency is conditioned by and linked to the proper working of the community as a whole. In a larger sphere this is as Mumford has clearly shown, the whole meaning of machine technique, an emphasis on standards for the community, collective standards, not individual standards. The social and political implications of this new orientation are obvious, and the scientific method is useful here to gather the necessary information and to make use of it, as was seen clearly in the last lecture in this series, by Mr. Chapman.

Science and the Architect

As to science itself, many architects will share my personal consciousness of inadequate training and experience in scientific methods and knowledge. At every turn one is hampered by this. The problem of training the architect to take full advantage of the scientific method is beyond the scope of this talk, but I remember with pleasure and satisfaction attending (in 1932, I think it was) a so-called Refresher Course at the Building Research Station. In one short fortnight I learnt more about building than in six years at school. The whole of the knowledge gained was to me, at any rate, entirely new, and I have always admired the delicacy of the words "Refresher Course." Is it too much to ask that, when circumstances permit, the Building Research Station should renew this valuable service and, perhaps, extend its scope as a full-scale education of architects, builders, and laymen as well ?

Finally, what is the architect's part in this great movement? In the past, as a profession, we have not played any significant role in housing affairs. The reasons for this are many, and we need not discuss them here. It is now clear, however, that housing is a national affair, concerning every one of us as members of a community. In this great problem, the setting right of past faults and neglect ; and the introduction of new standards and improvements in the future, not one of us can be disinterested, and architects especially *must* play their part to the full.

BOOKS

Those marked * are in the R.I.B.A. Library.

*Bauer (Catherine). Modern Housing. Lond. : Geo. Allen & Unwin. 1935.

*Bernal (J. D.). The Social Function of Science. Lond. : Routledge 1939.

Brumwell (J. R. M.), ed. This changing world. Lond. : Kegan Paul, Trench & Trubner. 1944.

*Giedion (Sigfried). Space, time and architecture. Reprint. Camb. Mass. : Harvard U.P. 1941.

*Interdepartmental Committee appointed by Minist[ry] of Health. [Department] of Health for Scotland, and Minist[ry] of Works [But Comee.] House construction. (Post-war building studies, No. 1). Lond. : H.M.S.O. 1944.

*Mumford (Lewis). The Culture of cities. Lond. : Secker & Warburg. 1938 ; reprint (without bibliog.) 1940. The Social foundations of post-war building. (Rebuilding Britain series). Lond. : Faber & Faber. 1943.

*Saarinen (Eliel). The City. *&c.* New York : Reinhold Pubg. Corpn. [1943].

*Sinclair (Robert). Metropolitan man. Lond. : Geo. Allen & Unwin. 1937 ; reprint 1938.

U.S.A. : National Resources Committee. Technological trends and national policy. Washington. 193 .

Whitehead (A. N.). Science and the modern world. Cambridge : u.p. 1925 (reprinted).

Architects' Fees for State-Aided Housing

HOUSING SCHEMES, EXCLUDING MULTI-STOREY FLATS

Having regard to the desirability of employing architects for the design of houses of the smaller type likely to be erected by local authorities and public utility societies and to aid in the solution of the housing problem generally, the R.I.B.A. have drawn up a special scale of charges relating thereto.

It is essentially in the interest of all parties that the architect should be charged with control throughout all stages of the scheme in order that his designs, drawings, and specifications may be adequately interpreted.

The scale throughout is exclusive of reasonable travelling and out-of-pocket expenses and printers' charges for additional copies of drawings and documents.

The scale applies to a state-aided housing scheme (not including multi-storey flats) to be carried out on one site and executed continuously under one commission.

A. Lay-out.

For taking instructions, negotiating with ministries, government departments, regional and local authorities, including the preparation of two copies of drawings required, preparing preliminary sketch to 1-2,500 scale and finished drawing of the lay-out to 1-500 scale, and where the architect is employed to do this work in conjunction with the planning of the houses, the fees are to be :

For the first	4	dwellings	£2 0 0	a dwelling
„ next	6	„	1 15 0	„
„ „	15	„	1 10 0	„
„ „	25	„	1 5 0	„
„ „	25	„	1 2 6	„
„ „	25	„	1 0 0	„
„ „	25	„	0 17 6	„
„ „	25	„	0 15 0	„
„ „	25	„	0 12 6	„
„ „	25	„	0 10 0	„
„ „	25	„	0 7 6	„
All over	225	„	0 5 0	„

B. Constructional Work for Roads and Sewers.

For making constructional drawings of the roads and sewers and preparing specification from a standard specification the fees are to be :

£1 15s. a dwelling.

If general supervision by the architect is required, this charge is to be increased to £2 5s. a dwelling.

C. House Design.

For taking instructions, preparing sketch plans, submitting to Committee, making variations to suit requirements and re-submitting, preparing $\frac{1}{8}$ in. scale and $\frac{1}{2}$ in. working drawings and full-size details of the approved designs, submitting plans to the local authority as required by building regulations, obtaining quotations for P.C. sums, preparing specification, obtaining tenders from contractors, submitting tenders to the Committee, and advising the Committee on the contract, supplying drawings and instructions to the contractors as provided for in the conditions of the building contract, general supervision of the work but not constant superintendence, reporting to the Committee on the progress of the work, instructing clerk of works, issuing certificates, making out report under the maintenance clause of the contract and settling final accounts, the fees are to be :

For the first	4	dwellings	£22	a dwelling
,, next	6	,,	20	,,
,, ,,	15	,,	18	,,
,, ,,	25	,,	16	,,
,, ,,	25	,,	14	,,
,, ,,	25	,,	12	,,
,, ,,	25	,,	10	,,
,, ,,	25	,,	9	,,
,, ,,	25	,,	8	,,
,, ,,	25	,,	7	,,
,, ,,	25	,,	6	,,
All over	225	,,	5	,,

It is the intention that a reasonable number of different designs shall be included in this scale up to a number not exceeding 10 designs in the larger number of dwellings.

In the case of four dwellings, two different designs are to be provided if required, and in the case of six dwellings three different designs are to be provided if required.

D. Additional Services not included under A., B. and C. Above.

The following services for which the architect may be employed will be charged on a *quantum meruit* basis :

Negotiations relating to the site.

Making surveys, measurements and plans of the site or existing buildings and taking levels.

Making drawings for and negotiations with ground landlords and public authorities not referred to above.

Making arrangements in respect of party-walls, rights of light and other easements.

Additional work involved where the work is carried out under more than one building contract.

Making extra drawings for the client, contractors, sub-contractors, or clerk of work's use.

Work in connection with Litigation and Arbitration.

E. Abandoned Works.

Where any of the architect's services have been rendered under Sections A.-C. of this scale and the whole or part of the proposed scheme is subsequently abandoned, reduced fees shall be payable in accordance with the amount of work done.

STATE-AIDED MULTI-STOREY FLATS

Having regard to the desirability of employing architects for the design of multi-storey flats likely to be erected by local authorities and public utility societies and to aid in the solution of the housing problem generally, the R.I.B.A. have drawn up a special scale of charges relating thereto.

It is essentially in the interest of all parties that the architect should be charged with the control throughout all stages of the Scheme in order that his designs, drawings and specifications may be adequately interpreted.

The scale throughout is exclusive of reasonable travelling and out-of-pocket expenses and printers' charges for additional copies of drawings and documents.

The scale applies to a state-aided housing scheme (not including houses of a smaller type) of multi-storey flats to be carried out on one site and executed continuously under one building contract.

A. Design and Supervision.

For taking instructions, preparing sketch plans, submitting to Committee, making variations to suit requirements and re-submitting, preparing $\frac{1}{8}$-in. scale, $\frac{1}{2}$-in. scale working drawings and full-size details of the approved designs, submitting plans to the local authority as required by building regulations, obtaining quotations for P.C. sums, preparing a specification, obtaining tenders from contractors, submitting tenders to the Committee, and advising the Committee on the contract, supplying drawings and instructions to the contractors as provided for in the Conditions of the building contract, general supervision of the work, but not constant superintendence, reporting to the Committee on the progress of the work, instructing clerk of works, issuing certificates and making report under the maintenance clause of the contract and settling final accounts, the fees are to be :—

If the cost is				With a minimum fee of
	£	£		£
Below	10,000	..	5 per cent.	..
Between	10,000 and	30,000	4½ per cent.	.. 500
,,	30,000 ,,	70,000	4 per cent.	.. 1,350
,,	70,000 ,,	100,000	3¾ per cent.	.. 2,800
,,	100,000 ,,	150,000	3½ per cent.	.. 3,750
,,	150,000 ,,	200,000	3¼ per cent.	.. 5,250
,,	200,000 ,,	250,000	3 per cent.	.. 6,500
Above	250,000		2¾ per cent.	.. 7,500

Should it be necessary to repeat the erection of a block of flats of a similar design to a block already erected, the fee is to be reduced by 20 per cent. on the cost of the repetition.

This scale is not intended to apply to special cases where direct generation and supply of district lighting, heating, or hot-water is involved, or where it would be necessary to employ consultants. In these cases reference should be made to the R.I.B.A.

B. Additional Services not included under A. above.

The following services for which the architect may be employed will be charged on a *quantum meruit* basis :—

Negotiations relating to the site.

Making surveys, measurements and plans of the site or existing buildings or taking levels.

Making drawings for and negotiations with ground landlords and public authorities not referred to above.

Making arrangements in respect of party-walls, rights of light and other easements.

Making extra drawings for the client, contractor and sub-contractor or clerk of work's use.

Work in connection with litigation and arbitration.

C. Abandoned Works.

Where any of the architect's services have been rendered under Section A. of this Scale, and the whole or part of the proposed scheme is subsequently abandoned, reduced fees shall be payable in accordance with the amount of work done.

WAR-DAMAGED AND DESTROYED CHURCHES

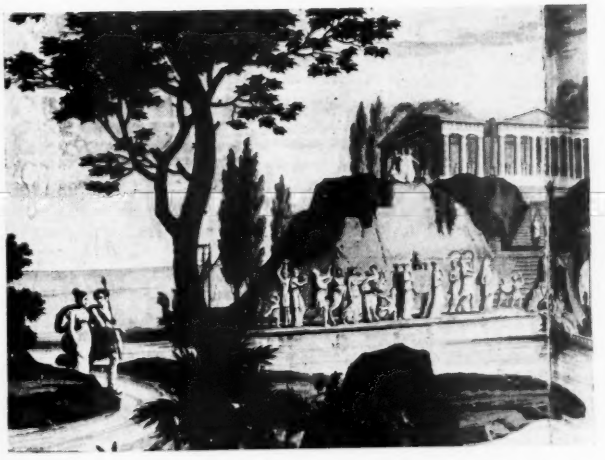
A scheme has been agreed between the War Damage Commission and a Committee, presided over by the Bishop of London, for dealing with churches, monasteries, convents and other ecclesiastical buildings which have suffered damage in enemy raids in Great Britain and Northern Ireland. Details of the arrangements were published on 15 May, and particulars may be obtained from the War Damage Commission. A copy of the descriptive memorandum is in the R.I.B.A. Library.

Tawstock, Devon. St. Peter's Church

Eynsford, Kent

Exeter. Pennsylvania Park

Devizes, Wilts. The Corn Exchange



Falmouth, Cornwall. Early 19th century Wallpaper in the drawing-room of Marlborough House

PHOTOGRAPHS FROM THE NATIONAL BUILDINGS RECORD EXHIBITION

A NOTE ON ENGLISH CHURCH PLANNING IN THE MIDDLE AGES

By Dr. HELEN ROSENAU, Ph.D.

Many factors have contributed to the characteristic development of English Church planning. First, underlying the English tradition are the ancient traditions of the Near East, and especially the Syrian tradition which strongly emphasises a clear orientation of the church, although there are a few exceptional buildings with apses on the eastern as well as the western ends. The simple type, with one apse only, was ultimately derived from Egyptian and Babylonian temple traditions, which had been taken over by the Jews, who, having directed the facade of their Temple towards the east, later turned their synagogue facades or apses towards Jerusalem. They developed an " historical " orientation, a feature which was taken over in the Mohammedan " Kiblah." (Turning towards Mecca in prayer instead of Jerusalem.) This austere and simple lay-out is opposed to the Hellenistic and Roman development, which encouraged extensive and complicated planning in large units. The Roman juxtaposition of apses is characteristic, leading to arrangements like those of the Temple of Venus and Rome in Rome, or those found in the Imperial Fora and the Baths of the Emperors Trajan and Caracalla, in which the apses are at opposite ends of the main halls. Another type, as found in the Pantheon and the Minerva Medica in Rome, which displays a circle of niches, is of an outstanding spatial effect and appears in a semi-circular abbreviation on the famous plan belonging to the period of the Emperor Septimus Severus, the " Forma Urbis Romæ " (Fig. 1).[1]

The type with double apses, probably of secular origin,

Fig. 1

influenced the numerous double choirs of Carolingian monastic architecture. It appears in the famous St. Gallen plan, as well as in a number of English examples, such as the cathedral in Canterbury, whilst the semi-circle with niches forms the base of the French " chevet." However, the simpler plans, derived from the Near East and allowing for rigid orientation, remained most popular in England.

It appears worth noting in this context that the *Codex Amiatinus*, a text of the Vulgate, now in the Bibliotheca Laurenziana in Florence, is of English origin and has among its miniatures two which display some Jewish iconographic influence (between 678-715).[2] One is the illumination depicting Ezra restoring the sacred manuscripts. *Hoc reparavit opus.* The cupboard full of books seen in the background is derived from the traditional Jewish representation of the Shrine of the Scrolls. But even more important for the present purpose is an illustration of the Tabernacle and its main ritual objects, rendered in a painstaking manner and based on the biblical text (Fig. 2). The sections of the pillars are given on the south side, while the north side shows them in a bird's-eye view, and the same principle of mixing and combining different viewpoints obtains throughout the picture, the aim being to secure the utmost clarification of the details. The four points of the compass are clearly marked: Dysis = West; Mesembria = South; Arctos = North; Anatol = East. It is worth noting that an almost identical description appears in the *Vita* of the English Saint, Neotus: " Qui Neotus licet . . . moraretur in partibus ab anatole atque mesembria ex opposito remotissimis, sub glaciali tamen Dysis algore, fidei atque caritatis semper ferbuit ardore " (*Vita S. Neoti VII*). The same principle of perspective as found in the Amiatinus was applied in the Romanesque and early Gothic periods and persists to this day in the traditional art of Islam, especially with regard to the sacred sites of Mecca (Fig. 3 over).[3]

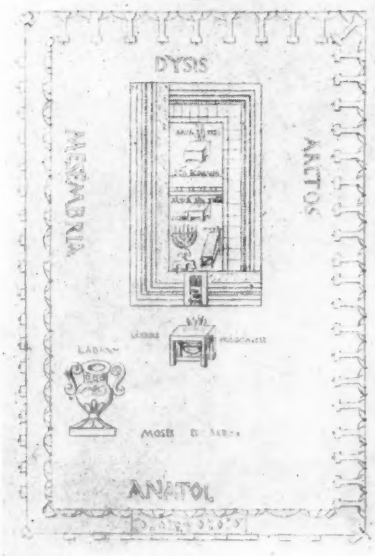
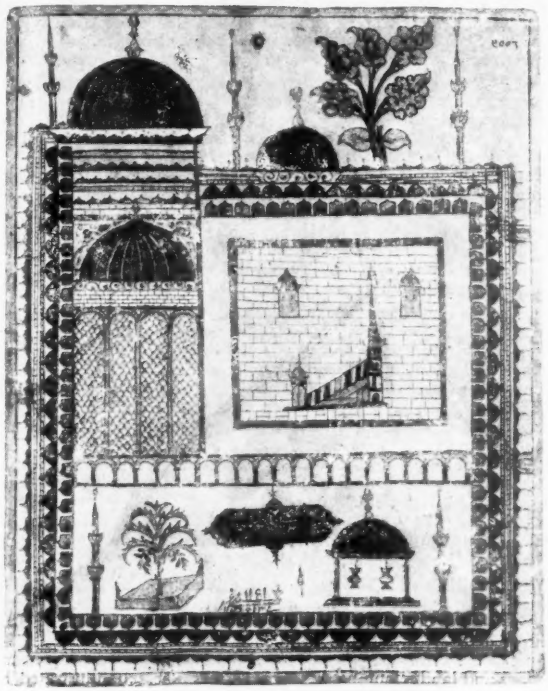
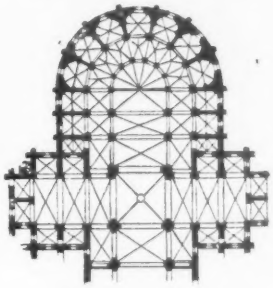


Fig. 2.

It is characteristic that, with the influence of the Cistercians and their straight choir endings, the underlying " oriental " current was resuscitated in English architecture. By contrast, on the Continent the Cistercians' Early Gothic churches were influenced by the great cathedral " chevets " (Fig. 4), as in Clairvaux III, Pontigny II (Fig. 5), Heisterbach and Marienstadt. In this country monastic influence retained its importance for the planning of cathedrals, and so, as is well known, the strictly oriented Nine Altars of Durham Cathedral are derived from the Cistercian Abbey of Fountains, and the " chevet " is only found in exceptional examples, such as Canterbury Cathedral and Westminster Abbey.[4] Their monastic seclusion also facilitated the extension of the English cathedrals in length, since they were frequently situated outside the cities, in their own grounds—the " Close." The rigidity and austerity of planning in this country allowed of a strictness of orientation which is non-existent in the French churches with " chevet," and equally absent from the Italian cathedrals, whose architects regarded them largely

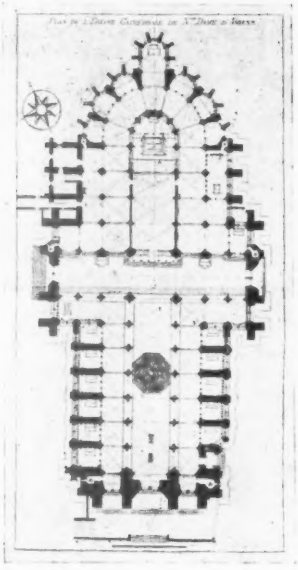




To left : Fig. 3. The Sacred Compound, Mecca, 1728 A.D., Cairo Museum.

To right. Fig. 4. Amiens Cathedral. Ground plan after Durand, including the labyrinth of 1288.

Above : Fig. 5. Pontigny II after Rose.



as monuments of civic pride. The theory of Viollet-le-Duc[5] stressing the significance of the lay element in French Gothic cannot be better corroborated than by the English evidence, which is of such a strikingly dissimilar and monastic character.

This development of English Gothic under religious as opposed to secular influence explains many of its characteristic elements. Continental art derived from it on more than one occasion,[6] and persisted as an undercurrent in this country until resuscitated in the art of the Neo-Gothic period.

NOTES

1. O. M. Dalton : *East Christian Art.* Oxford 1925, esp. p. 65 *ff.*
   A. W. Clapham : *English Romanesque Architecture.* Oxford 1930-34.
   H. Rosenau : *Design and Medieval Architecture.* London 1934, p. 2 *ff.*
   W. J. Anderson, R. Ph. Spiers and Th. Ashby : *The Architecture of Ancient Rome.* London 1937.
   Ch. Huelsen : *The Roman Forum.* Rome 1906.
2. G. Biagi : *Reproductions from Illuminated Manuscripts.* Florence 1914, p. 7 *f.*
3. *The Lives of the English Saints*, written at the suggestion of J. H. Newman, III, p. 80 *ff.* See also Ducange, *Glossarium*, under "Dysis."
4. J. Bilson in *The Architectural Journal*, 66, 1909, p. 185 *ff.*
5. Viollet-Le-Duc : *Dictionnaire Raisonné de l'Architecture Française*, especially under "Architecte."
   H. Batsford and C. Fry : *The Greater English Church of the Middle Ages.* London 1940.
6. Such examples are possibly the Lady Chapels in the Cathedral and in the Church of St. Germain in Auxerre. The sculptures in the choir of Cologne Cathedral point in the same direction. *Cp.* the writer's *Der Koelner Dom*, Cologne 1931.

Book Reviews

The Journey to Work : Its Significance for Industrial and Community Life. By Kate K. Liepmann, Ph.D. xii+100 pp.+folded diags. Kegan Paul. 1944. 15s.

This book is something unusual in the literature of town and country planning. Most books on the subject cover a wide general field. This is a detailed study in a strictly limited specific field. It is one of the first pieces of genuine objective research that we have had into a particular aspect of the innumerable related aspects of planning. And it is admirably well done. It is a model for a great deal of similar work which needs to be undertaken on other aspects of the subject ; for it is time that the planner had at his disposal a whole series of authoritative investigations of this kind in all the various fields of human activity with which he is concerned. His shelves are becoming overladen with general treatises. What he now needs is specific studies.

The first part of Dr. Liepmann's book is devoted to a detailed discussion of the problems of the daily movement of great masses of the population, and the conditions under which that movement arises. The second part is a mass of carefully-analysed statistical data, the most recent of which she has herself collected by survey and research. In analysing her data, Dr. Liepmann looks at the daily journey in two ways : as conflux at the workplace, and as dispersion from the place of residence ; and this same method of viewing the matter runs through her general discussion. In this discussion she covers her field very thoroughly. Maintaining that large-scale daily movement of workers is an essential condition of large-scale industrial enterprise, she shows that for the worker the principal significance of his mobility is that it extends the market in which he is able to offer his labour, thus enlarging his economic independence ; that this mobility facilitates the meeting of changes such as occur in the expansion or decline of industry ; and that the daily journey to work helps considerably in that preservation of the family unit which is considered so important by most sociologists. But these advantages may be accompanied by disadvantages, so she discusses the price of the daily journey

and the hardships which result from it, and suggests measures of relief against them. She also discusses the effect of the daily journey on community life—the emergence of special types of places arising from the severance of home and factory, and the social failure which results from that. This leads her to a consideration of the desirable size and pattern for a town, and to some piquant conclusions which will make her very unpopular with Mr. F. J. Osborn.

Altogether this is a valuable and interesting book : concise, lucid, authoritative, and workmanlike.

T. S.

Country and Town : A Summary of the Scott and Uthwatt Reports, prepared under the supervision of and with an introduction by G. M. Young. Sm. 8vo. 142 pp. Penguin. 9d.

This is the countryman's view of the necessity for planning, presented by G. M. Young, scholar, historian and countryman. There are several summaries of the Scott and Uthwatt Reports, and of the Barlow Report—which give balanced pictures of their proposals, but none which gives all that and what Mr. Young gives in his introduction and in the summaries—lively and enthusiastic encouragement to planners and planning in terms which should be understood by any cultured man of Britain. Mr. Young is a conservative and stalwart defender of private land ownership which gives his argument some interesting contrasts with the other outstanding pamphlet summary, G. D. H. Cole's Nuffield College, *Britain's Town and Country Pattern.*

From "Housing the Australian Nation"

Housing the Australian Nation, by F. Oswald Barnett and W. O. Burt. 8vo. 86 pp. Left Book Club of Australia, Melbourne, 1942. 2nd imp. 1943.

Homes for Workers in Planned Communities through Collective Action. 8vo. 62 pp. International Union, United Automatic Aircraft and Agricultural Implement Workers of America. 1943. Detroit.

These two pamphlets are written from the labour point of view and both tackle the housing question with a fervour and determination indicative of their origin in quarters where these needs are matters of practical experience. Both are technical in their content and have much in them of interest to architects.

The Australian pamphlet starts with a grim—but perhaps not surprising—picture, backed by statistics, of the conditions in all the Australian states. Of 7,330 houses visited in a survey by the State Slum Abolition Board of Victoria, only 1,000 could be described as "fit for human habitation" ; all the rest were structurally unsound or lacked essential equipment or apartments.

In Sydney, it is stated, 30,000 homes "have long outlived their usefulness" ; in Adelaide there are almost 9,000 houses "unfit for habitation."

The slum problem is described as essentially a problem of poverty and the related economic factors in housing such as rents and the social capacity of private enterprise house building are examined.

There are many photographs and plans to illustrate the character of present Australian housing and some interesting contrasts with English practice are evident. The Victorian Housing Commission dictated a ceiling height of not less than 9 feet. For large families "dormitory houses" have been provided in which the children sleep up to six in a large bedroom. The book ends with the outline of a national housing scheme involving the creation of a Commonwealth Housing Commission to control the work of the various state commissions, particularly in respect to housing finance, ownership, materials supply and bulk contracting. They refer to the liberal facilities offered by the Co-operative Societies as compared with those offered by the normal building societies and banks.

The American pamphlet presents the workers' housing problem to workers in a dynamic form. In brief the argument is : Our industrial buildings are the finest in the world . . . scientific skill and efficient management seem to belong exclusively to industry—our homes which could be as fine, are dim, dirty and neglected, the people who presume to provide homes for working people, the speculative builders, don't care for our needs, they care only for profits and quick turnovers. If the same quality of fine design and management that can be seen in industry is to exist in housing, the workers themselves must develop and control their own housing programmes. The unions have the power, the money and the organising ability, all they need is the opinion of the workers behind them.

This argument is simply and enthusiastically presented and the contrast between present day slums, speculative housing and properly designed, built and sited housing demonstrated by many photographs and by illustrations of two lay-outs prepared for the U.A.W., one of which is shown in comparison with a speculative builder's lay-out of the same site. The U.A.W. present their case with a background of bitter experience, gained in their attempts to achieve a proper housing policy at Willow Run (fully described in *Task* 4). They urge their members to "get cracking" and to solve their own problems instead of waiting on the reluctant and parsimonious housing activity of speculators or even for Federal activity.

E. T. H. Tagung für Landesplanung. Zürich. 1942. 4to. 151 pp. Verlag. Leemann. Zürich.

We hear all too little of Swiss architecture and planning, so that this interesting and detailed report of a recent conference held by the *Eidgenössische Technische Hochschule*, Zürich, is of particular value. Many of the leading Swiss town planners took part. The following are titles of some of the thirty-four papers published in this report. Survey and mapping and land planning, by Prof. C. F. Baesckli, illustrated by examples of Swiss maps ; Land planning and agriculture by Dr. O. Howald ; Improvement schemes by Prof. E. Ramser ; Nature and technic by Dr. H. Hoffmann ; Air routes and foreign communications by Prof. E. Amstutz ; and Housing by W. Dunkel.

There are Papers on the planning of Basel, Bern and Geneva by their city planners and on Regional planning in the Zürich district. Building sites and planning by Dr. H. Sigg ; Hygiene and planning by Prof. W. von Gongenbach and Planning and the preservation of nature by H. Burger.

BUILDING TYPES AND PLANNING

The American School and University. 15th Annual Edn. 4to. 371 pp. inc. advts. Am. School Publg. Corp. 1943.

The 15th Edition of the American School and University Annual follows the lines of previous issues and includes a large amount of valuable data on every aspect of school design and equipment. Among the special articles of interest to British architects are the following :—An analysis of planning for post-war school construction, by N. L. Engleheart, Associate Superintendent for Schools, New York. Suburban school building, by R. E. Burket, with details of classroom, day and artificial lighting. Community schools built in war-time, by J. L. Reid, architect, illustrated by plans of several Californian schools. Types of schools to serve to-morrow's needs, by W. Lescaze. Schools are for children, by Elizabeth and Rudolf Mock, both the above two articles excellently illustrated by plans and views of modern schools. School buildings planned round the educational programme, by W. S. Holmes and A. R. Shigley.

Secondary school physical fitness buildings and equipment, by J. B. Nash, Professor of Education, N. York University. Children's centres and the future (day nurseries and nursery schools), by J. E. Nichols, of State Department of Education, Hartford, Conn. Intelligent planning of classroom lighting, by Henry L. Wright, architect. There are also articles on various technical and art departments, food service equipment, etc., and a large number of advertisements with technical information of value.

Memorandum on Farm Buildings, by the National Veterinary Medical Association of Great Britain and Ireland. 8vo. 48 pp. 1944. n.p.

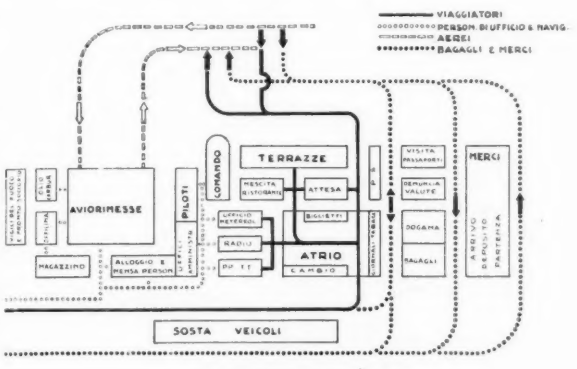
This memorandum was submitted by the National Veterinary Medical Association to the Ministry of Agriculture's Committee on farm buildings and contains the considered opinions of a highly expert

body on fundamental details of farm design. Whether or not all the recommendations made are incorporated in the Committee's findings the memorandum is likely to be a mine of useful information for farm architects. The main headings of the memorandum are : General principles affecting design, sites, general lay-out. Design and structure of farm buildings, materials . . . lighting and ventilation. The housing of horses ; the housing of cows, including milking sheds, etc. ; the housing of pigs. Basic principles of air space, air requirements and lighting for animal houses and finally, recommended dimensions.

Caratteri Degli Edifice, by Armando Nelis. 4to. 354 pp. Libraria Italiana. Turin.

This Italian reference book has reached the library through the generosity of Mr. Gerald Nodes, a member of the R.I.B.A. fighting in Italy, who finds time between military duties to search in bookshops on behalf of the library and discuss architecture with the Italians he helps to liberate.

Caratteri degli edifice consists of the lectures on building planning given by the author at the Royal Polytechnic, Turin, and is perhaps the most



SCHEMA FUNZIONALE DI AEROPORTO

complete work of its kind. The plan functions of a large number of different kinds of buildings are analysed in detail, the conjunction and inter-relation of departments is studied in the text and their formal relationships indicated in fifty-two complex, though clear, diagrams. The following building types are analysed : Houses, hostels and agricultural cottages. Hospitals and sanatoria and clinics. Schools, universities and technical colleges. Prisons and reformatories. Churches and monasteries. Transport buildings for road, rail and sea. Postal telegraph and radio buildings. Theatres and cinemas.

Apart from its special war-time interest as a relic of fascist technical education the book has considerable practical value as a work of reference.

BUILDING TECHNOLOGY

Simple Examples of Reinforced Concrete Design, by Oscar Faber 3rd Edn. 8vo. 83 pp. Oxford. 1944. 6s.

Reinforced Concrete Simply Explained, by Oscar Faber. 3rd Edn. 8vo. 80 pp. Oxford. 6s.

Dr. Faber's two elementary text books on reinforced concrete are on every R.I.B.A. list of books recommended for students and new editions must be heartily welcomed. Since the last editions in 1926 and 1929 important developments have taken place in reinforced concrete design, whereby its strength has been increased and regulations, such as those of the L.C.C., have been modified accordingly. The new editions of Dr. Faber's books are brought entirely up-to-date in their references both to technical advances and the latest regulations. The price is low though it might have seemed possible to have brought it even below 6s. for books such as these which have a universal and very large and continuing sale.

Fluorescent Lighting, by A. D. S. Atkinson. 8vo. 144 pp. 1944. Newnes. 12s. 6d.

This is the first English publication on the architectural uses of fluorescent lighting which is widely used in America and has been widely used in British industrial installations during the war, but has not yet found its way into normal architectural practice. There can be no doubt that it will do so soon.

The author who is a member of the engineering staff of the Electric Light Manufacturers' Association, first describes the fluorescent light source and the production of ultra-violet radiation and the success which has attended the efforts of scientists to produce a lamp with the great economic advantages of the electric discharge lamp, but with a spectrum more nearly related to daylight. The achievement of such a lamp has literally opened up a new era of lighting and illuminating engineering and gives new tasks and new unimagined opportunities to the architect.

The question of installation is dealt with in detail and the performance of fittings is described in relation to commercial, industrial and decorative uses. A chapter on design data tabulates illumination factors and indicates the comparative merits of various types of fittings. The following chapter of 70 pages illustrates the application of fluorescent lighting in various types of factory, shop and office.

The book is clear in its presentation of detail and is well illustrated.

Natural Lighting : general considerations for those concerned with lighting problems of reconstruction. 8vo. 12 pp. Illuminating Engineering Society. 1944. n.p.

A brief survey of general principles of day lighting ; the assessment of daylight and daylight factors ; the direction of light, with emphasis on the desirability of carrying windows high up the wall ; the " essential characteristics of natural lighting and finally, external obstructions and daylight and town planning in which reference is made to the recent important B.R.S. studies which Mr. Allen described in this R.I.B.A. paper, February 1944.

The Fireproofing of Timber. Sm. 8vo. 32 pp. 1944. Timber Development Association. 1944. (Supplied free on request to T.D.A., 75, Cannon Street).

The renewed interest in timber building in anticipation of improved supplies makes this pamphlet of special interest. The various fire retarding processes are described and their effect on working qualities of timber. Details of the various salts recommended for fire proofing are given and the methods of application. Surface coats and fire resisting paints are also described. Appendices give three groups of methods of testing and the pamphlet ends with a list of proprietary fire retarding materials.

Valuation for War Damage, by Ronald Collier, F.S.I., F.A.I. 8vo. 276 pp. Butterworth & Co. 1944. 10s. 6d.

The extent of war damage has made the business of valuation and the presentation of claims for compensation of immediate importance to every architect in practice. Mr. Collier's work is likely to be a standard text. The following are the main chapter heads. Land, war damage and claimant's land. Acts affecting war damage valuation. Temporary works payment. Cost of works or value payment. Cost of works payment. Value payments. Division of value payments. Hybrid and converted value payments. Land compulsorily acquired. Payments in the public interest. Properties not normally the subject of sale, etc., etc. There are reproductions of the various forms in use and of the S.R. & Os., command papers, etc., referring to the Act.

The main chapters are mostly concluded by typical examples which greatly help towards understanding of the provisions.

Art Education and the War : sponsored by members of the fine arts staff of Teachers' College, Columbia University. 4to. 72 pp. Teachers' College, N. York. 1943. $1.25.

Seven teachers of art, including Prof. Bogner, Associate Professor of Architecture at Harvard, discuss the effects of war on museums, child art, housing, art education in England and Soviet painting. The contributions are pleasant and readable, but not very profound, though they will doubtless serve a useful purpose by saying again what cannot be said too often that art activity reflects the social life of its time and that this reflection can be controlled and worked into a creative reality. Professor Bogner in an article, " Housing, the people and progress." writes with moderate optimism of the effects of war experience on American house design. The war situation encouraged some hasty low standard conventional and copyist building, but it also has enlivened housing technique so that it is no longer necessary for a man to work and travel under twentieth century conditions while living in a house which dates back centuries in its architectural conception.

Review of Periodicals

1943-44—II *(continued)*

TOWN AND COUNTRY PLANNING (generally)

JNL., TOWN PLANNING INSTITUTE, *1943 Nov.-Dec., pp. 1-11 :*
W. Dobson Chapman's presidential address.

ARCHITECTS' JOURNAL, *1944 Jan. 13, pp. 25-8 :*
Land use, by Dr. Dudley Stamp : balance of competing needs. Illustrated by E. Suffolk Regional Planning maps. No. 22 in Physical Planning series.

JOURNAL OF THE TOWN PLANNING INSTITUTE, *1944 Jan.-Feb., pp. 68-9 :*
Problem of development rights, by Sir Gwilym Gibbons.

JOURNAL OF THE TOWN PLANNING INSTITUTE, *1944 Jan.-Feb., pp. 43-4 :*
Training and status of the planner : leading article.

JOURNAL OF THE TOWN PLANNING INSTITUTE, *1944 Jan.-Feb., pp. 44-54 :*
The geological basis of planning, by Edgar Morton, M.Sc., with special reference to English conditions. Bibliography.

BUILDER, *1943 Dec. 31, p. 536 :*
The geological basis of planning, by E. Morton, M.Sc. Paper to T.P. Inst.

JOURNAL, ROYAL SANITARY INSTITUTE, *1944 Jan., pp. 8-14 :*
Town and country planning and health. Paper by E. H. Doubleday, M.T.P.I., Regional Planning Officer ; and discussion.

JNL. OF INSTN. MUNICIPAL AND COUNTY ENGINEERS, *1943 Nov. 9, pp. 168-74 :*
The architect and surveyor in town and country planning. Contributions to discussion at "Practical planning" exhibition by engineers, architects (Ansell), surveyors and town planners.

TOWN AND COUNTRY PLANNING : PHASES OF DEVELOPMENT

ARCHITECTS' JOURNAL, *1943 Dec. 16, pp. 443-5 :*
Town and country planning : fact-finding, analysis and diagnosis, by Prof. Eva G. R. Taylor. No. 19 in Physical Planning series.

ARCHITECTS' JOURNAL, *1944 Jan. 27, pp. 79-82 :*
Planning and population. Article 23 in Physical planning series, by Dr. D. V. Glass.

NATIONAL PLANNING (specifically)

BUILDER, *1943 Dec. 17, pp. 487-8 :*
Country planning : address by Minister T. & C.P., to Council for Preservation of Rural England, on government policy.

BUILDER, *1944 Jan. 28, pp. 71-2 :*
National planning. The work of the R.I.B.A. Central Advisory Committee, described at Architectural Association meeting.

ARCHITECT AND BUILDING NEWS, *1944 Feb. 4, pp. 99-101 :*
The national plan of the Central Advisory Committee, R.I.B.A. : discussion on the Architects' approach to national planning, held at A.A. (Jan.). Extracts of papers on various aspects by A. W. Kenyon [*F.*], H. T. Seward [*F.*], A. L. Roberts [*F.*], and others.

REGIONAL PLANNING

TOWN AND COUNTRY PLANNING, *1943-4 Winter, pp. 158-61 :*
"Contiguous London," by Sir E. Macfadyen : attack on County of London Plan and plea for garden city development.

ARCHITECTS' JOURNAL, *1943 Dec. 30, pp. 478-9 :*
Housing densities and the London plan : letter from F. J. Osborn and editorial reply. Restatement of Town and Country Planning Association's policy.

ARCHITECTS' JOURNAL, *1943 Dec. 16, p. 446 :*
Surrey and Mitcham planning schemes prepared by Surrey Federation of Labour Parties.

BUILDER, *1944 Feb. 18, pp. 136-7 :*
The future of Surrey : article by Dr. H. V. Lanchester, & New towns in Surrey, address by T. Braddock to T. & C.P. Association.

JOURNAL OF THE TOWN PLANNING INSTITUTE, *1944 Feb., pp. 54-9 :*
East Suffolk reconstruction survey described by T. B. Oxenbury, County Planning Officer. Rural, regional and community planning.

ARCHITECTS' JOURNAL, *1944 Feb. 10, pp. 117-9 :*
Planning for a prosperous agriculture, by Dr. L. Dudley Stamp. No. 25 in Physical Planning series.

TOWN AND COUNTRY PLANNING, *1943-4 Winter, pp. 165-8 :*
Planning proposals for Dorset described by G. Clark.

TOWN PLANNING AND RE-PLANNING (including WAR DAMAGE RE-PLANNING)

ARKITEKT (Istanbul), *1943, 7-8, pp. 171-3 :*
Economic considerations in town planning. Article by Prof. R. Oelsner, Director Town Planning, Ankara.

JOURNAL TOWN PLANNING INSTITUTE, *1943 Nov.-Dec., pp. 14-6 :*
Town planning and health. Précis of Chadwick lecture by J. H. Forshaw [*F.*], Chief Architect, L.C.C.

TOWN PLANNING REVIEW, *1943 Autumn, pp. 10-28 :*
Studies in Urban Theory : The *De Re Aedificatoria* of Leon Battista Alberti, by W. A. Eden.

PENCIL POINTS, *1943 Dec., pp. 50-63 ; 1944 Jan., pp. 59-66 :*
Detroit planning studies. Analysis of industry, traffic, living and industrial areas, by J. D. Stephen under Saarinen at Cranbrook Academy.

MEMOIRS AND PROC. OF MANCHESTER LIT. AND PHIL. SOC., *1941-43, pp. 67-81 :*
"A plan for planning," by A. P. Simon (author of "Manchester made over"). The urban centre and suburban development ; regionalism, with special reference to Manchester.

ARCHITECTURAL RECORD (N.Y.), *1943 Nov., pp. 42-6 :*
Practical urban development, by T. S. Holden, President, Dodge Corporation. Fiscal policies and problems, estate development, criticism of "Stuyvesant Town" housing scheme, New York.

BUILDER, *1944 Jan. 14, pp. 33-8 :*
Clydebank replanned. Description and illustration of scheme by S. Bunton [*L.*], including designs for housing, prefab. plumbing unit.

NATIONAL BUILDER, *1943 Dec., pp. 89— :*
What is a town : an analysis of the plans for London by R. Myerscough-Walker—Mars, Royal Academy, London Regional Reconstruction Committee, and L.C.C. ; illustrated by plans and drawings.

ARCHITECTS' JOURNAL, *1943 Dec. 9, pp. 421-2, 429-32 :*
City of London : planning proposals by N. J. Aslan, described and illustrated.

ARCHITECT AND BUILDING NEWS, *1944 Mar. 17, pp. 190-1 ;* A. J. *Mar. 23 ;*
BUILDER, *Mar. 10, pp. 197— (;)* BUILDING, *Apl. :*
City of London plan : proposals by K. J. Lindy and B. A. P. W. Lewis [*A.*].

ARCHITECTURAL DESIGN AND CONSTRUCTION, *1944 Jan., pp. 10— :*
Brentford redevelopment scheme by H. V. Lobb, analysed by A. Chitty.

ARCHITECTURAL REVIEW, *1944 Jan., pp. 25-6 :*
Blackpool ; replanned by 6th form boys of grammar school.

JOURNAL, INSTITUTION MUNICIPAL AND COUNTY ENGINEERS, *1944 Jan. 4, pp. 248-62 :*
Replanning the central area of Wakefield. Paper by S. G. Wardley, City Engineer. Illustrated by models, maps.

TOWN PLANNING REVIEW, *1943 Autumn, pp. 29-37 :*
The plan of Cracow, Poland : its origin, design and evolution, by K. Dziewoński. Illustrated.

JOURNAL R.I.B.A., *1943 Dec., pp. 40-41 :*
The organisation of reconstruction in the U.S.S.R. Article by N. Kolly, Member U.S.S.R. Academy of Architects, on work of the Committee on Architecture set up by the Council of People's Commissars.

OFFICIAL ARCHITECT, *1944 Feb., pp. 64-71 :*
Soviet reconstruction in the liberated areas. Article by A. Ling [*A.*], A.M.P.T.I. Summary of programmes and achievement ; house and flat plans and designs ; principles of rural replanning. Illustrated.

JOURNAL, ASSOCIATION OF ENGINEERS AND ARCHITECTS OF PALESTINE, *1943 Dec., pp. 8-12 :*
Urban development : the size of a city, by Y. Schiffman, Municipal Engineer, Tel-Aviv, with particular reference to Palestine.

JOURNAL OF ASSOCIATION OF ENGINEERS AND ARCHITECTS IN PALESTINE, *1943 Aug.-Sept., p. 7 :*
Jerusalem. Proposals by S. Fonaroff for reconstruction of old city.

PENCIL POINTS (N.Y.), *1943 Nov., pp. 80— :*
"An architect looks to New York City's future," by C. D. Lay. Critical of "super-block" planning, intensive apartment use, etc. Including design for courtyard block development.

ARCHITECTURAL FORUM, *1944 Mar., pp. 69-74 :*
Central urban luxury flat development : article "under envelopic development *v.* land congestion" in Horse-sense planning series by Mayer & Whittlesey.

JNL., AUCTIONEERS' AND ESTATE AGENTS' INSTITUTE OF THE UNITED KINGDOM, *1944 Jan., pp. 24-5 :*
Restriction of Ribbon Development (Temporary Development) Act, 1943 : note by J. A. Rosevear, M.T.P.I.

ARCHITECTS' JOURNAL, *1944 Mar. 2, pp. 169-72 :*
Surveying and planning location of industry. Article by O. W. Roskill in Physical planning series.

ZONING

ARCHITECTS' JOURNAL, *1943 Dec. 23, pp. 463-6 ; Dec. 30, pp. 481-4 :*
Relation of service groups to social groups in town planning. Articles by Dr. R. E. Dickinson, No. 20 and 21, in Physical planning series. Illustrated by diagrams and maps, with special illustration of service areas of Leeds and Bradford.

BUILDER, *1944 Feb. 25, pp. 155-6 :*
Civic Centre, Birmingham. H. Manzoni, City Engineer ; gardens lay-out by W. Haywood [*F.*]. Views of model and note.

ARCHITECTURAL FORUM, *1943 Dec., pp. 78-82 :*
Better shopping conditions : store blocks planning—car parks, loading docks. No. 2 in "Horse-sense" Planning series, by Mayer and Whittlesey.

JOURNAL OF THE TOWN PLANNING INSTITUTE, *1944 Jan.-Feb., pp. 60-6 :*
School sites and planning schemes : Deputy Director Education and Senior Planning Assistant, W. Sussex. Playing field requirements : relation between school numbers and sizes and population.

ARCHITECTS' JOURNAL, *1944 Jan. 27, p. 82 :*
Schools and neighbourhood units. Demographic analysis. Reprinted from ARCH. FORUM, 1943 Oct.

JOURNAL, INSTN. OF MUNICIPAL AND COUNTY ENGINEERS, *1944 Jan. 4, pp. 263— :*
Standards of residential development ; discussion (19 Nov.) following paper by R. Nicholas, City Surveyor, Manchester, published in Jnl. M. & Cy. E. 14 Sept. '43. (See list in Feb. Jnl., 101.)

ARCHITECT AND BUILDING NEWS, *1944 Jan. 7, pp. 12-3 :*
Housing and home-making, by W. A. Eden [*A.*]. Neighbourhood units.

HOUSING AND TOWN PLANNING NEWS-BULLETIN, *1943 Feb.-Mar., p. 10 :*
Standards of residential development and redevelopment. Report to Corporation of Manchester. Housing density, site dimensions, play parks, allotments.

BUILDER, *1944 Mar. 3, p. 176 :*
Neighbourhood units : note with plans by Dr. H. V. Lanchester [*F.*] of "Safety first" neighbourhood, with safety routes between dwellings and community buildings.

FORM (Stockholm), *1943 No. 10, p. 157:*
Gustavsberg. Lakeside development near Stockholm. Small houses, hostels, schools, etc. Illustrated.

ARCHITECTURAL FORUM, *1943 Dec., pp. 67-74 :*
Marin City, California. War community of 6,000, built and occupied in under five months. Architect, C. F. Grommé ; F. E. Lloyd and H. P. Clarke, associates. Houses based on standard F.P.H.A. plans, site-prefabricated panels tongued and grooved redwood. Community centre, with club, market, clinic, school.

TASK (New York), *1943 (No. 4), pp. 35-40 :*
Stuyvesant Town : critical article on town of closely-packed flats planned by Metropolitan Life Assurance Co., New York. Density, 445 per acre ; open space, 29 acres per 1,000 ; proposed population, 24,315 ! Followed by article, Investment policy of the Metropolitan Life.

PROCEEDINGS OF THE ROYAL INSTITUTION OF GREAT BRITAIN, *1943, Vol. 32, pt. 2, No. 148, pp. 368-83 :*
The small house and the large town. Lecture by Prof. W. G. Holford. Density neighbourhood and community factors, open space.

PLANNING (P.E.P.), *1944 Mar. 3 :*
"Old houses." Analysis of obsolescence problem in Britain.

SITE PLANNING

BUILDING, *1944 Feb., pp. 36-9 :*
Housing : square pattern *v.* row pattern, by W. Segal : terrace housing, gardens, insolation, density. Illustrated.

BUILDING, *1944 Mar., pp. 60-3 :*
A lay-out for small houses : a new street and garden pattern for detached houses, by W. Segal.

TOWN AND COUNTRY PLANNING, *1943-4 Winter, pp. 162-4 :*
Density : a practical proposal by F. J. Osborn. Calculation of densities in terms of square feet of internal floor space.

ROADS, STREETS, TRANSPORT

BUILDER, *1944 Feb. 4, p. 100 :*
Safety on existing roads : some practical suggestions, by H. G. Lloyd, M.Inst.C.E.

ARCHITECT AND BUILDING NEWS, *1944 Jan. 14, p. 51 :*
Transport and the architect, by G. Dawbarn [*F.*]. General considerations in sea, canal, road, rail and air.

JOURNAL, INSTITUTION OF CIVIL ENGINEERS, *1944 Jan., pp. 129— :*
Post-war transport in Britain, by B. D. Richards. Outline of existing system, with proposal for National Transport Trust to administer all forms.

GARDENS ; PRESERVATION OF AMENITY

WERK (Zürich), *1943 Sept., pp. 275-296 :*
Garden design : articles "The spell of the English garden," by C. D. Furrer ; "Gardens and sculpture," by G. Jedlika ; "Gardens and landscape," by G. Ammann ; "The relation of house and garden," by H. Baur ; "Site considerations in arden design," by O. Mertens. All well illustrated.

ARCHITECTURAL REVIEW, *1944 Jan., pp. 3-8 :*
Exterior furnishing or sarawaggi : the art of making urban landscape. Article by the Editor, illustrated by Kenneth Rountree, pleading merits of variety of shape, pattern, texture, etc. : and for more courage in combining old and new. Including bibliography of past articles building up to present argument.

COUNTRY LIFE, *1944 Feb. 18, p. 296 :*
The origin of landscape gardening, Wilton and Castle Howard : letter by L. Whistler. Illustrated.

COUNTRY LIFE, *1944 Feb. 18, pp. 286-7 :*
Gardens in Stockholm, by F. R. Yerbury. Public parks and playgrounds.

JOURNAL, ROYAL ARCHITECTURAL INSTITUTE OF CANADA, *1943 Dec. :*
Work of the Niagara Parks Commission : park buildings, landscape design.

COUNTRY LIFE, *1944 Feb. 11, pp. 242-3 :*
Shell-work rooms and grottoes, by Margaret Jourdain.

ARCHITECTURAL FORUM, *1943 Nov., pp. 59-74 :*
"Horse-sense planning." First in series by A. Mayer and J. Whittlesey proposing fields for private enterprise in improvement of urban amenity, by, *e.g.*, development of parks and playgrounds, roof gardens, tree planting, balconies, etc. ; and, on larger scale, of neighbourhood units. Possibilities of latter demonstrated with reference three N. York areas.

Accessions to the Library

1943-44—III

Owing to the urgent need to economise space this list now records only new publications, excepting old publications having reference to current demands, e.g. on planning and topography. The others are summarised at end under "Older Works."

For economy of space the following also are now generally excluded from the list : (1) Year-books, lists of members, &c. ; (2) extracts from periodicals, and reprints of periodical articles already noted in the REVIEW OF PERIODICALS *; (3) Government leaflets of slight or transitory interest. Full particulars are available in the library.*

Books presented by the publishers for review marked R.
Books purchased marked P.
**Books of which there is at least one copy in the Loan Library.*

ARCHITECTURE

FOWLER (W. H.) 03 : 72
Fowler's Architects, builders and contractors pocket book.
3rd ed. 6¼″. Manchester : Scientific Pubg. Co. [c. 1943.]
7s. 6d. R.

SPON, *publ.* 03 : 72
Spons' Practical builders' pocket-book. 8th ed. Clyde Young and Bernard Engel, eds.
6¼″. Lond. 1943. R.
72 : 087.1

FRY (JANE [B.]) [DREW], *Mrs.* MAXWELL FRY, *and* FRY ([E.] MAXWELL)
*Architecture for children.
7½″. 117 (119—2) pp. + pls. Lond. : Geo. Allen & Unwin. 1944. 7s. 6d. *Presented by the Authors* [*FF.*], & P. (2).

R.I.B.A. : RECONSTRUCTION COMMITTEE Inf. file 72] 37
General principles for the teaching of architectural appreciation in schools. An outline prepared by the . . . Committee for the Teaching of Architectural Appreciation in Schools *&c.*
dupl. typescript. 13″. [1943.]

R.I.B.A. Inf. file 72] 37 (063)
Conference on the teaching of architectural appreciation in schools. . . . Abridged report from the verbatim record.
dupl. typescript. 13″. 1944.
72 : 37 (47) (09)

MOSKOVSKII ARKHITEKTURNII INSTITUT
150 let arkhitekturnogo obrazovania [years' architectural education] v Moskve. Stenogrammi *&c.*
8½″. 76 pp. Moscow : Izdatel'stvo Akademii *&c.* 1940.
Presented by Mr. Wright Miller.

BOARD OF EDUCATION Inf. file 72 : 37] 37
Educational reconstruction. (Cmd. 6458.)
pam. 9¾″. Lond. : H.M.S.O. 1943. 6d. P.

THEORY

GIEDION (SIGFRIED) Inf. file 72.01 [71 : 3
A Faculty of interrelations. (*From* Michigan Society of Architects, Weekly Bulletin, vol. 17, 1, Jan. 5.)
leaflet. 11¼″. Detroit. 1943.
Presented by the Author.

HISTORY

BRAUN (HUGH) 72.03 (458.2)
*An Introduction to Maltese architecture. (*From* Sunday Times of Malta, Jan. 23 to Mar. 12, consec.)
pam. 8″. n.p. [1944.]
Presented by the Author, F.S.A. [*F.*] (2).

BRONSHTEIN (S. S.) 72.03 (47 P)
*Arkhitektura goroda Pushkina [town of Puskhin (*formerly* Tsarkoye Selo)]. (Akademiia Arkhitektury S.S.S.R.)
11½″. 45 + (5) pp. + pls. Moscow : Gosudarstvennoe Arkhitekturnoe Izdatelstvo Akademii *&c.* 1940.
Presented by the Academy and Society for Cultural Relations.

ROME : BRITISH SCHOOL AT ROME 72.032.7
Notes on Roman buildings.
7¼″. 31 leaves. [Rome. 1938.]
Presented by Mrs. Walcot from the library of the late William Walcot [*F.*].

72.034 (42).8 : 92 C + 72.034 (47)

LOUKOMSKI (GEORGES [K.]) *or* LUKOMSKIJ (G. C.)
Charles Cameron (1740—1812). An illustrated monograph on his life and work in Russia, particularly at Tsarskoe Selo and Pavlovsk, in architecture, *&c.* Trans. and ed. by Nicholas de Gren. With . . . historical notes and bibliog.
11″ × 8½″. 103 pp., incl. pls. Lond. : Nicholson & Watson. 1943. R.

FRY ([E.] MAXWELL) 72.036.6 + 711
*Fine building.
viii + 156 pp. + pls. Lond. : Faber & Faber. 1944. 15*s.* P. (6).

ARCHITECTURAL VOCATION ; PROFESSIONAL PRACTICE

ROWSE (H. J.) Inf. file 72.07 : 62
Engineer and architect. Possibilities of collaboration. Reprinted with additional illustrations from [Jnl. R.I.B.A.] (Jan.).
pam. 11″. 11 pp. 1944.

AMERICAN INSTITUTE OF ARCHITECTS 72.08
The Handbook of architectural practice.
4th ed. 10¾″. 90 (92—2) + various pp. (appendices sep.) Washington. 1943.
Presented by the Institute.
Previous ed. (here given as 3rd ed.), 1927 [catd. as 2nd ed. reprint], already in Library.

72.08 : 333 + 699.895 : 72.025.1] 347.434

LAWRANCE (D. M.) *and* MAY (H. G.)
*Modern methods of valuation of land, houses and buildings. (*Successor to* CURTIS (C. E.), The Valuation of land and houses, last ed. 7th ed., by Sydney A. Smith, [1933].) [Includes war damage compensation.]
8½″. xii + 443 pp. Lond. : Estates Gazette. 1943. £1. R. & P.

Inf. file 72.08 : 347.23 (41.1)

SCOTLAND : DEPARTMENT OF HEALTH FOR SCOTLAND
The Rent Restrictions Acts, 1920-1939. Summary of the main provisions [as they apply to Scotland]. (D.H.S. Memorandum No. 160/1943.)
pam. 8½″. [Edin. 1943.]
Presented by the Department.

WILLIS (A. J.) 72.083.123
Elements of quantity surveying.
3rd ed. 9½″. xi + 272 pp. + (ii) folding pls. text illus. Lond. : C. Lockwood. 1943. 15*s.* R.
1st ed. 1935 and 2nd ed. 1940 in library.

PLANNING (INCLUDING UNIT PLANNING)

AMERICAN STANDARDS ASSOCIATION Inf. file 72.095 [693.06 : 389.6
Proposed American standard basis for the co-ordination of dimensions of building materials and equipment. (Sponsors : American Institute of Architects ; Producers' Council, Inc.) (A 62.1.)
dupl. typescript. 11″. 1943.

72.095 [693.06 : 389.6] 693.1

Proposed American standard basis for the co-ordination of masonry (conforming to and supplementing the Proposed . . . of building materials *&c.* (Sponsors : American Institute of Architects ; Producers' Council, Inc.) (A 62.2.)
dupl. typescript. 11″. 1943.
With 3 letters, dupl. typescript.
—Presented by the Association.

PRODUCERS' COUNCIL, *Washington* Inf. file 72.095 [693.06 : 389.6
A.S.A. Project A 62. Dimensional co-ordination in the post-war program. A presentation [report] by M. W. Adams before the . . . Council . . . and a review of a report . . . [of] Committee for the Industrial and Scientific Provision of Housing . . . 1943 *&c.*
pam. 11″ × 8½″. Washington. 1944.
Presented by the Project.

BUILDING TYPES (CIVIL)

× MS.
MILLER (HEDLEY W.) 725.191
The Architecture of the fire service. (Thesis awarded distinction in Final Examination, 1943 Dec.)
typescript, *Repr.* & *Ph.* 13″. (with 'Key Index' on cord). [1943.] *Presented by the Author.*

725.39 : 629.139

AIR MINISTRY : DEPARTMENT OF CIVIL AVIATION
*Technical characteristics of aerodromes.
Part 1 : Siting and lay-out of land aerodromes.
dupl. typescript (incl. cover). 8″ × 6¾″ (some pp. folding). [1944.] *Presented by the Department.* (2).

Inf. file 725.4 [696.93 + 697 + 697.9

INDUSTRIAL HEALTH RESEARCH BOARD (MEDICAL RESEARCH COUNCIL)
Conditions for industrial health and efficiency. Pamphlets.
No. 1. Ventilation and heating. Lighting and seeing.
Reprint. pam. 8½″. Lond. : H.M.S.O. 1943 (1944). 3d. P.
× MS.

HERSHAM (A.) 725.519.2
The Design and equipment of operating theatres. (Thesis awarded distinction in Final Examination, Dec.)
typescript, *Ink & Col. D.*, and *Repr.* 13″. [1943.] *Presented by the Author.*

725.822 : 72.092.4

YORKSHIRE COUNCIL FOR FURTHER EDUCATION : COMMITTEE ON THE DRAMA IN FURTHER EDUCATION
*The Drama in further education. ([Pubns. of Council], No. 28.)
8¼″. 60 pp. n.p. 1944. 2*s.* R. & P.
× MS.

WORTHINGTON (CLIFFORD) 725.823.4
The Cinema and its influence on modern architecture. (Thesis for Final Examination.)
typescript, *Pencil D., & Repr.* 12¾″. 1943. *Presented by the Author.*
× MS.

SUTCLIFFE (T. A.) 725.835
Community centres. Their planning and equipment. (Thesis awarded distinction in Final Examination, Dec.)
typescript, *Ink and White D.* 13″. [1943.] *Presented by the Author.*

(RELIGIOUS)

GILIAROVSKAIA (N.) *L*26.5 (47 M)
Khram Vasiliia Blazhennogo na Krasnoi Ploshchadi v Moskve V— S— church in Red Square, Moscow]. Pamiatnik Russkoi arkhitektury [architectural monuments] xvi—xvii veka, *series.* (Massovaia Biblioteka, *cover series title.*)
pam. 6½″. Moscow, &c. : "Iskusstvo." 1943.
Presented by Professor D. Arkin [Hon.Corr.Mem.], of Moscow

(EDUCATIONAL)

AMERICAN SCHOOL AND UNIVERSITY 15th annual edition. 1943. R.
(series) 72 : 940.5344

MINISTRY OF WORKS shelved 727.1 : 693
Post-war building studies :—
*No. 2. Standard construction for schools. By a committee appointed by the President of the Board of Education.
pam. 9¾″. Lond. : H.M.S.O. 1944. 6d. R. & P.

727.3 (46 M) + 711.573 (46 M)

MADRID : CIUDAD UNIVERSITARIA DE MADRID
La Ciudad Universitaria de Madrid.
10½″. (unpaged.) Lond. 1943.
Presented through the British Foreign Office.
× MS.

JARRETT (M. C.) 727.8
Libraries. (Thesis awarded distinction in Final Examination, Dec.)
typescript, *Ink & col. D.* 13″. 1943.
Presented by the Author.

727.95 (479.22 T)

NOVYE SOORUZHENIIA SOVETSKOI ARKHITEKTURY
Arkhitektura i stroitel'stvo Instituta Marksa-Engel'sa—Lenina v Tbilisi (Filial) [Marx-Engels-Lenin Institute at Tbilisi (Georgia)]. [By] A. V. Shchusev. (Vypusk pervyi [vol. i].)
10½″. 13 + (ii) pp. + pls. Moscow: Izdatel'stvo Akademii Arkhitektury S.S.S.R. 1940.
Presented by Professor D. Arkin [Hon.Corr.Mem.], of Moscow.

(DOMESTIC)

MATTHEWS (OLIVE) Inf. file 728 : 649 + 728 : 392.63
Target of plans for old and single people.
leaflet. dupl. typescript. 13″. [1944.] 1d.
Presented by the Author (2).

728 : 693

INTERDEPARTMENTAL COMMITTEE APPOINTED BY THE MINIST[RY] OF HEALTH, THE [DEPARTMENT OF HEALTH] FOR SCOTLAND, AND THE MINIST[RY] OF WORKS
*House construction. (MINISTRY OF WORKS: Post-war building studies, No. 1.) [Research by D.S.I.R. Building Research Station and others.]
9¾″. 152 pp. + pls. Lond.: H.M.S.O. 1944. 2s. P. (10).

PEEBLES (J. C.) *and* KNOPF (W. C.) Inf.file 728 [697.4 : 662.997
Studies of comfort conditions and thermal properties of a house employing solar auxiliary heating.
dupl. typescript. 11″. [1942 or -43.] *Presented.*
Inf. file 728 [697.4 : 662.997

LIBBEY-OWENS-FORD GLASS COMPANY, *Toledo, U.S.*
Solar heating for post-war dwellings *&c.*
dupl. typescript. 11″. [1943.] *Presented.*

BONE (STEPHEN) *and* ADSHEAD (MARY) 728.03 : 087.1
[The Little boy and his house.]
ob. 9″ × 12″. 60 pp. (lith.) Lond.: Dent. [19—.] *Presented.*
Title-leaf lacking.

728.1 (41.1) : 940.5344

SCOTTISH HOUSING ADVISORY COMMITTEE (DEPARTMENT OF HEALTH FOR SCOTLAND)
*Planning our new homes. Report by the . . . Committee on the design, planning and furnishing of new houses. (Pubn. . . . for Committee by D. of H. for S.)
9¾″ × 7¼″. 96 + xliv pp. + front. + xxxv + (i) pls., some backed, some folding + end pl. Edin.: H.M.S.O. 1944. 3s. P. (6).

[LABOUR PARTY] Inf. file 728.1 (42)
Your home planned by labour, *cover title.*
pam. 8½″. [Lond. 1943.] *Presented.*

KING (ROY W.) Inf. file 728.1 (42)
Homes for the people. ([House Builders' Association of Great Britain.])
pam. 8″. [Lond. c. 1943.] *Presented.*

COMMUNIST PARTY Inf. file 728.1 (42)
A Memorandum on housing.
pam. 7¼″. [Lond. 1944.] *Presented.*
Inf. file 728.1 (42) : 940.5344

CONSERVATIVE AND UNIONIST PARTY ORGANISATION: CONSERVATIVE SUB-COMMITTEE ON HOUSING *for* CENTRAL COMMITTEE ON POST-WAR RECONSTRUCTION
"Looking ahead." Foundation for housing. Being an interim report of the C— Sub-C— *&c.*
pam. 8½″. Lond. 1944. 3d. R.

MINISTRY OF HEALTH Inf. file 728.1 (42) : 940.5344] 333
Post war housing: purchase of land. (Circular 28/44.)—*With* Enclosure *&c.*, Statement made by the Minister *&c.*
2 leaflets. dupl. typescript. 7″, 8″. 1944. R.
Inf. file 728.1 (42) : 940.5344] 69.051.22
Advance preparation of housing sites. (Circular 14/44.) *With* Enclosure [same title].
dupl. typescript. 13″, &c. 1944. R.
Inf. file
728.1 (42) : 940.5344] 69.051.22

MINISTRY OF TOWN AND COUNTRY PLANNING
Advance preparation of housing sites. (Circular 7.)
leaflet. 9¾″. Lond.: H.M.S.O. 1944. 1d. R.
728.1 (42.55) (06) (058)

NORTHAMPTONSHIRE *county council*: MEDICAL OFFICER OF HEALTH
Annual report . . . Housing Suppt. for . . . 1932.
13¼″. (ii) + 192 pp. Rushden. 1933.
Presented by Mr. B. S. Townroe [Hon.A.].
728.1 (73) box N.H.A.

U.S.: NATIONAL HOUSING AGENCY 728.1 (73)
Housing the nation's war workers. Address of John B. Blandford, Jr.
dupl. typescript. 10½″. [1943.]
The Outlook for the housing industry. By John B. Blandford, Jr.
dupl. typescript. 10½″. [1943.]
—*Both presented by the Agency.*
728.1 (73) box N.H.A.

BLANDFORD (JOHN B.), *junr.* 728.1 (73)
Housing principles for America. ([National Housing Agency.])
dupl. typescript. 10½″. [1944.]
Presented by the Agency.
728.1 (73) box N.H.A.

EMMERICH (HERBERT) 728.1 (73)
Good homes for all Americans.
dupl. typescript. 10½″. [1944.] *Presented.*
728.1 (73) box
728.1 (73) : 940.5344] 014.3 + 711.4—163 (73) : 940.5344] 014.3

U.S.: NATIONAL HOUSING AGENCY—OFFICE OF THE ADMINISTRATOR: DIVISION OF URBAN STUDIES
Abstracts of selected material on postwar housing and urban development, *cont.*
Group iv. (Jan.)
dupl. typescript. 10½″. 1944.

BARNETT (F. OSWALD) *and* BURT (W. O.) 728.1 (94)
*Housing the Australian nation. (Research Group of the Left Book Club, *Melbourne.*)
Reprint. 8¾″. (iii) + 86 pp. Melbourne. 1942 (1943).
Presented by the Authors. (2).

CAHILL (J. A.) Inf. file 728.1 (94)
An Address. [Housing problem in Australia.] (*From* Medical Jnl. of Australia, Jan. 1.)
leaflet. 11″. n.p. [1944.] *Presented*

(*To be continued*)

Correspondence

DEAR SIR,—I have read the review by Mr. John Summerson of my book on Charles Cameron in the April number of the JOURNAL with some disappointment.

It seems to me that to have so negative an attitude to Cameron's creations, recognised by many British experts, as well as by Russian connoisseurs, including appreciations published in more recent years in the U.S.S.R., is tantamount to denying the merits of an "Ambassador of British Art"—so undeservedly forgotten in the past 150 years.

Yet it was the R.I.B.A. JOURNAL which, in 1934, was one of the first to give room to an article of mine on Cameron, illustrated by a number of photographs, in which I laid stress on the fact that Cameron was not merely a follower of Palladio, but had displayed his own originality in using freely the Classic forms—a fact with which your reviewer is apparently at variance. If this may have been the case in regard to the "Gallery" at Tsarskoe, the proportions at Baturin, as well as at Pavlovsk, have been strictly classical, as also in other cases.

The criticism expressed, therefore, appears to me as only casual, trying to find fault, as it were. What we appreciate in a Palladio, or a Guilio Romano, is the very departure from the banal *canonique traditional*, and a bold leap into one's own originality and "personality," while yet retaining all the essentials of classicism, as we see both in Cameron, just as against a G. Vignola or a John Nash! Yours, etc.,

GEORGES LOUKOMSKI.

Mr. Summerson writes:

My attitude to Cameron's architecture is not 'negative'—I think he was a bad designer, judged by the standards of, say, the best Adam

work. That does not make him a less interesting figure or Mr. Loukomski's researches less valuable. Must we always succumb to the glamour of 'period'? Unless we apply rigorous standards of criticism to the architecture of the past, I doubt if the pursuit of architectural scholarship is worth much. I am ready to be convinced that Cameron was a better architect than I think him, but, in the meantime, I must defend my right to call him a bad architect without being denominated an enemy either of historical research or Anglo-Russian relations.

TEACHING APPOINTMENTS VACANT

The Polytechnic, Regent Street.—School of Architecture and Town Planning

Applications are invited for the following posts :

(1) Full-time Senior Lecturer and Studio Master in Constructional Subjects.
(2) Two Full-time Studio Masters and Lecturers in Architectural Subjects.
(3) Part-time Lecturers (Evenings) in Town and Country Planning Subjects, and Studio Masters in Planning and Civic Design.

Candidates for (1) and (2) must be Fellows or Associates of the R.I.B.A. The Degree or Diploma of a fully-recognised School of Architecture will be a recommendation. Previous teaching experience is an essential requirement for (1).

Candidates for (3) should be Members or Associate Members of the Town Planning Institute.

Salaries in accordance with the Burnham Technical Scale for London (plus war-time bonus), subject to the usual 5 per cent. deduction for superannuation. Commencing salary according to qualifications and experience.

Further particulars and forms of application, which must be returned by July 29, 1944, can be obtained by sending a stamped, addressed foolscap envelope to the DIRECTOR OF EDUCATION, The Polytechnic, 309, Regent Street, W.1.

L.C.C. Hammersmith School of Building

HAMMERSMITH SCHOOL OF BUILDING AND ARTS AND CRAFTS, Lime Grove, Shepherd's Bush, W.12.—Full-time Male Lecturer on Building Construction and associated subjects required at September next for the Senior Day School at the above-named institute. Appointment is temporary, subject to review at any time and in any event at the end of the war, but may lead to permanency. Burnham technical scale (£276-£15-£528), plus bonus. Allowance given for industrial and/or teaching experience in respect of commencing salary.—Apply on Form T.1/40, obtainable from THE EDUCATION OFFICER (T.1), County Hall, Westminster Bridge, S.E.1, returnable by July 19, 1944.

Essex Education Committee.—South-West Essex Technical College and School of Art, Walthamstow

The Governors invite applications for the following full-time appointments in the Department of Building :

(*a*) Lecturer and Studio Instructor in Architecture.
(*b*) Lecturer and Studio Instructor in Structural Engineering.
(*c*) Lecturer and Studio Instructor in Building Construction.

Salary : Burnham (Provincial) Scale.

Application, by latter, should be sent not later than July 3 to the CLERK TO THE GOVERNORS OF THE COLLEGE, Forest Road, Walthamstow, E.17.

Notes

NOTES FROM THE MINUTES OF THE COUNCIL
16 May 1944

Appointments

British Standards Institution :
Technical Committee on Calcium Sulphate Building Plasters : Mr. A. H. Barnes [*F.*], Mr. S. Howard [*L.*].
Technical Committee on Paints : Mr. Guy W. North [*F.*].
Committee on Drawing Office Equipment and Materials : Mr. Guy W. North [*F.*].
Technical Committee on Classification of Stone : Mr. W. A. Forsyth [*F.*].
Technical Committee on Cast Stone : Mr. Stanley Heaps [*F.*].

R.I.B.A. Representative on the Advisory Panel of the Cremation Society :
Mr. John L. Denman [*F.*].

Board of Architectural Education :
Board of Moderators :
Mr. Hubert Lidbetter [*F.*].
Concessions Committee :
Mr. A. B. Knapp-Fisher [*F.*]
to fill vacancies caused by the resignation of Mr. Basil M. Sullivan upon becoming Chairman of the Board of Architectural Education.

The Constance Fund for the Promotion and Encouragement of the Art of Sculpture.
The President has consented to serve as a representative of the R.I.B.A. on a Committee constituted under a Trust Deed governing the Constance Fund, which has been established by Mrs. Constance Goetze, widow of the late Sigismund C. H. Goetze, for the promotion and encouragement of the art of sculpture.

Scales of Fees for State-Aided Housing Work and for Multi-Storey Flats

On the recommendation of the Practice Committee the Council approved scales of fees (full particulars of which appear in this issue of the JOURNAL) for these classes of work to replace the Scale for Local Authorities' and Public Utility Societies' Housing Work, which had previously been withdrawn.

Scale of Architects' Fees for Speculative Builders' Work for a Minimum of Ten Houses

On the recommendation of the Practice Committee the Council formally withdrew this scale, which was published on pp. 755-6 of the 1939-40 Kalendar.

R.I.B.A. Representatives Serving on Committees of British Standards Institution

The Council approved a recommendation of the Architectural Science Board that a Committee composed of all R.I.B.A. representatives serving on Committees of the British Standards Institution should be formed to meet occasionally to co-ordinate the activities of the various representatives.

Obituary

The Acting Secretary reported with regret the death of the following members and student :—

Lieut.-Col. Stanley Casson [*Hon.A.*]. Killed on active service.
Charles Ernest Elcock [*F.*].
William Turnbull [*F.*].
Frederick Walter Kinneir Tarte [*Retd.M.S.A.*].
Newstead Adams Allen [*A.*].
Albert Turnbull [*A.*].
Cecil Stuart Roche [*Retd.A.*].
James Whiteford Claxton [*L.*].
John Heycock Davies [*L.*].
John Thomas Harriman [*L.*].
Luwee Harris [*L.*].
Frederick Arthur Huntley [*Retd.L.*].
Alexander Lickely [*Retd.L.*].
Frank Gibson Smith [*Student*]. Killed on active service.

Messages of sympathy have been conveyed to their relatives.

Conference Convened by the N.F.B.T.E. on the Size of Cement Bags

The Council approved the following resolution adopted by a Conference recently convened by the National Federation of Building Trades Employers for submission to the Cement Makers' Federation :—

"That in the opinion of this Conference the post-war change proposed of packing cement in bags of 1 cubic foot capacity of not less than 90 lbs. weight is in the common interest of the manufacturers of concrete-mixing machines, professional bodies and contractors."

Membership

The following members were elected :—
As Fellows (3), as Associates (12), as Licentiates (24).

Election, 27 June 1944 :
Applications for election were approved as follows :—
As Fellows (2), as Associates (4), as Licentiates (7).

Election, September 1944 (Second List) :
One application for election as a Fellow and two applications for election as Associates from overseas candidates were also approved.

Reinstatements :
The following ex-Members were reinstated :—
As Fellow : William Goodchild [*Retd.F.*].
As Associates : Major Herbert George Coulter.
Ernest Ronald Harrison.
As Licentiate : Frank Ernest Bromige.

Application for Transfer to the Retired Members' Class :
The following member was transferred to the Retired Members' Class under Bye-law 15 :—
As Retired Fellow : Fred Harrison.

THE INSTITUTE'S APPEAL

The following is the twenty-sixth list of donations received up to 31 May 1944 in response to the appeal issued to all members and honorary members and students on 16 December 1938.

Members who are contemplating making an increased payment of subscription, whereby the amount of the increase will be payable to the appeal fund, are reminded that if they are prepared to enter into an agreement for the payment of such increased subscription for a period of seven years or more they will be entitled to deduct income tax at the standard rate from the amount by which the subscription is increased.

Full particulars were published in the issue of the JOURNAL for 6 February 1939 and can be obtained on application to the Acting Secretary, R.I.B.A.

DONATIONS	£	s.	d.
J. J. Beck [*A.*], third donation	1	8	0
F. M. Cashmore [*F.*], second donation	3	3	0
Owen Eaton [*F.*] and C. H. Merrifield [*A.*], third donation	5	5	0
William Gill [*late L.*]	9	9	0
F. A. O. Jaffray [*F.*], sixth donation	5	5	0
A. W. R. Kendrick [*A.*], fifth donation	1	1	0
F. C. Levitt [*late L.*], fourth donation	2	11	0
Stanley Natusch [*A.*], fifth donation	2	2	0
A. G. Quibell [*Ret. L.*], fourth donation	2	2	0
" " fifth donation	2	2	0
W. J. Werry [*A.*], sixth donation	0	10	6
ADDITIONAL SUBSCRIPTIONS			
H. Barrett [*A.*]	3	3	0
Thomas Brown [*A.*]	1	1	0
Gerald J. Cuzens [*Student*]	0	10	6
Colonel M. K. Matthews [*F.*]	2	12	6
John R. Smith [*L.*]	3	3	0
L. Sylvester Sullivan [*F.*]	0	19	1
Professor L. W. Thornton White [*F.*]	3	3	0
DONATIONS FROM R.I.B.A. ALLIED SOCIETIES			
Institute of Southern Rhodesian Architects	10	10	0
Norfolk and Norwich Association of Architects (balance of rebate of members' subscriptions for 1943)	0	9	7
Northants, Beds and Hunts Association of Architects (balance of rebate of members' subscriptions for 1943)	0	7	0
East Africa Institute of Architects (rebate of members' subscriptions for 1943)	3	4	9
Royal Society of Ulster Architects (rebate of members' subscriptions for 1943 and balance 1942)	5	8	6

The donations and increased subscriptions or contributions received and promised and bank interest up to 18 May 1944 represent a total of £8,211 15s. 5d. This amount does not include increase of subscriptions or contributions promised for which no definite period is stated.

Membership Lists

ELECTION: MAY 1944

The following candidates for membership were elected in May 1944.

AS FELLOWS (3)

TOWNDROW: FREDERIC EDWARD [*A.* 1922].
YOUNG: WILLIAM CECIL [*A.* 1915], Manchester.

And the following Licentiate who has passed the qualifying Examination:—

TAYLOR: GERTRUDE MOLLY JUSTICE (Mrs. R. A. Gerrard), Bath.

AS ASSOCIATES (12)

BURDEN: HAMISH EADIE, D.A. (Edin.), Stirling.
CONNELL: PAUL HAROLD, Cape Town.
EDWARDS: MISS MARY DOROTHY, B.Arch., Auckland.
HERSHMAN: ABRAHAM ANTHONY [Final], Salford.
JAMILLY: EDWARD HIGHAM, Dip.Arch.
JEFFRIES: WILLIAM TREVOR [Special Final Exam.].
LAWRIE: MISS MARION HOPE, Alness, Ross-shire.
NATHANIELSZ: RAY JAMES HOLMAN.
ORME: WILLIAM ROSSELL.
STEWART: WILLIAM FERGUSON, B.Sc., Abington, Lanarks.
STORER: FREDERICK ERNEST SAMUEL, Birmingham.
SUTCLIFFE: TOM ALLISON.

AS LICENTIATES (24)

AKERS: RICHARD THOMAS.
BISHOP: ALBERT EDWARD.
BURROWS: PHILIP RANDLE, Wirral.
CLAGUE: THOMAS WILFRED, P.A.S.I., Isle of Man.
DAVIES: GWILYM JENKINS, P.A.S.I., Llandyssul, Cardiganshire.
DICKSON: JOHN ALEXANDER THORNTON, Dunfermline.
DUNLOP: ALEXANDER, Kilmarnock.
EDMONDS: STANLEY EARL, Stafford.
ELLIS: REGINALD ARTHUR CHARLES.
FENNELL: FREDERICK WILFRID, Chester-le-Street.
FRANCIS: HENRY PRESCOTT.
HANNAFORD: GUY MELVILLE.
HARVEY: MARSHALL, Junr.
HURST: SIDNEY CECIL, P.A.S.I., Brighton.
IVES: ERNEST LOVELL, Northampton.
JORDAN: NORMAN.
KETT: FREDERICK SIDNEY, Axminster.
LEE: JOHN JAMES.
MCCROSSAN: RUSSELL PETER.
MARSH: HAROLD, King's Lynn.
ROBERTS: MAJOR KEITH PRESTON.
THORN: KENNETH HARRY, Bath.
WELTERT: FREDERICK ALBERT.
WOOD: WILLIAM GLOVER, Leicester.

ELECTION: OCTOBER 1944

An election of candidates for membership will take place in October 1944. The names and addresses of the candidates, with the names of their proposers, found by the Council to be eligible and qualified in accordance with the Charter and Bye-laws are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary, R.I.B.A., not later than Saturday, 10 June 1944.

The names following the applicant's address are those of his proposers.

AS HON. FELLOW (1)

MUNNINGS: ALFRED JAMES, President of the Royal Academy, Castle House, Dedham, Essex. Proposed by the Council.

AS FELLOWS (2)

CRABTREE: WILLIAM, Dip.Arch.L'pool. [*A.* 1929] Briarcroft, Chapel Road, Tadworth, Surrey. Prof. C. H. Reilly, J. A. Slater and A. H. Moberly.

WILKIE: DAVID ARCHIBALD [*A.* 1931], 29 Fleet Street, E.C.4; 16 Gade Avenue, Watford, Herts. J. R. Young, Herbert Kenchington and E. J. T. Lutyens.

AS ASSOCIATES (4)

The name of a school, or schools, after a candidate's name indicates the passing of a recognised course.

BLAIR: ROBERT CAPPER, B.Arch. (L'pool) (Univ. of Liverpool), "Melton," Barlaston Old Road, Trentham, Stoke-on-Trent. Prof. L. B. Budden, Lt.-Col. Ernest Gee and G. G. Wornum.

BRENDON: ARTHUR GEOFFREY CUNNINGHAM [Final], "Southcote," Crapstone, Yelverton, S. Devon. E. U. Channon, J. L. Fouracre and A. S. Parker.

FIRTH: JAMES RONALD [Final], 23 Heath Walk, Downend, Bristol. E. V. Dyson, L. G. Hannaford and J. N. Meredith.

PICKARD: MISS NORA FRANCES, Dip.Arch. (Leeds) [Leeds School of Architecture], Lawn Head, Long Preston, Skipton, Yorks. Applying for nomination by the Council under Bye-law 3 (*d*).

AS LICENTIATES (18)

BURGESS: CECIL GURNEY, County Architect's Office, Denbigh County Council, Acton Hall, Wrexham; c/o 72 Mansfield Road, Luton, Beds. William Ellis, J. E. Bladon and Sydney Gregson.

CARGILL: ARTHUR FORBES, Planning Officer, County Buildings, Dumfries; 5 Stewart Hall Gardens, Lockerbie Road, Dumfries. Jos. Weekes, G. D. Macniven and F. C. Mears.

COOPER: ERIC PETER WELLBURN, M.A. (Cantab.) Sir Edwin Cooper, R.A., & Son, 4 Verulam Buildings, Gray's Inn, W.C.1; Viking Cottage, Althorne, Nr. Chelmsford, Essex. W. H. Ansell, E. V. Harris and T. E. Heysham.

DARGIE: JACK ARKLIE, c/o Messrs. Rolls Royce, Ltd., Crewe; "Bycroft," 25 Shrewbridge Road, Nantwich, Cheshire. Applying for nomination by the Council under the provisions of Bye-law 3 (*d*).

DEVINE: EDWARD ALLISON; 7 Gosforth Park Villas, North Gosforth, Newcastle-upon-Tyne. Lt.-Col. G. Reavell, L. S. Stanley and applying for nomination by the Council under Bye-law 3 (*d*).

DYER: HERBERT HUGH ROLFE, 56 Hoads Wood Road, Hastings, Sussex. Alwyn Underdown, C. J. Kay and J. D. Clarke.

HALLIWELL: NORMAN, Acting Chief Architect, Blackpool Corporation; 45 Cornwall Avenue, Blackpool. F. L. Lumb and the President and Hon. Sec. of the Manchester Soc. of Arch. under Bye-law 3 (*a*).

JONES: NORMAN LEWIS, County Offices, Dolgelley; Ael-y-Bryn, Bontddu, Dolgelley. Sir Giles Scott, A. C. Bunch and applying for nomination by the Council under Bye-law 3 (*d*).

KEMP : ARTHUR SYDNEY ; " Maycroft," 4 Tregonissey Road, St. Austell, Cornwall. J. A. Lucas, V. J. Esch and Thomas Wallis.

KNIGHT : HORACE ATHELSTANE WOULFE, London County Council, Westminster, S.E.1 ; Withy Cottage, Woodham Lane, Woking, Surrey. Henry Hyams, J. W. Hepburn and R. Wilson.

MCNAB : ROBERT, c/o War Department Valuer, 26 Blythswood Square, Glasgow ; 2 Eden Place, Rothesay, Scotland. J. R. McKay, A. M. McKinley and A. G. Henderson.

MARSHALL : DONALD PLASKETT, 31 St. John's Road, Seven King's, Essex ; R. H. J. Mayhew, T. H. B. Scott and Terence Carr.

ORD : VICTOR, Felling U.D.C., Felling, Gateshead 10 ; " Rosarium," Sunderland Road, South Shields. T. A. Page, R. H. Morton and William Stockdale.

RILEY : HAROLD FRANK, Messrs. Littlewoods Mail Order Stores, Ltd., 25 Hamilton Square, Birkenhead, Cheshire ; 25 Dovedale Road, Hoylake, Cheshire. G. E. Tonge, Kenmure Kinna and Norman Jones.

RUSHTON : HENRY THEODORE, 90 Hillway, Highgate, N.6. Sir Charles Nicholson, G. W. Smith and L. H. Harrington.

SECRETT : MICHAEL JOHN FREDERICK, 12 Beaufort Road, Ealing, W.5. Lt.-Col. A. F. Hooper, Stanley Blount and G. W. Smith.

WHITTAKER : CLIFFORD, c/o Messrs. Wood, Goldstraw & Yorath, Station Road, Tunstall, Stoke-on-Trent ; New Hedges, Brookfield Avenue, Endon, Stoke-on-Trent. E. H. Ashburner and applying for nomination by the Council under Bye-law 3 (*d*).

WRAITH : CAPTAIN GEORGE, R.E., 2 South Parade, Doncaster, Yorks ; 71 Alderson Drive, Town Moor, Doncaster. E. H. Walker, Morris Thompson and H. A. Hickson.

Competitions

Manor House Hospital, Golders Green

The Buildings and Estates Committee of the Manor House Hospital, Golders Green, London, N.W.11, invite architects to submit, in competition, designs for a Women's Section of the Hospital, to be erected on a site in North End Road, opposite the existing Hospital buildings.

Accommodation : (*a*) 72 Beds.
(*b*) Out-Patients' Department and Dispensary.
(*c*) Nursing and Domestic Staff.

Premiums : £500, £300 and £150.

Last day for submitting designs : 12 October 1944.

Last day for questions : 12 August 1944.

Assessor : Sir Giles Gilbert Scott, O.M., R.A.

Conditions of Competition may be obtained on application to The Secretary, The Manor House Hospital, Golders Green, London, N.W.11. Deposit £1.

London Airport

The " Aeroplane " invite designs for an Airport for London from architects and others interested in post-war aviation.

Competitors must be members of the British Empire.

Closing date, 31 December 1944, which will be extended for overseas competitors.

The Judges are :—Mr. Austin Blomfield, M.A. [*F.*] ; Dr. Roxbee Cox, B.Sc., D.I.C., F.R.Ae.S. ; Air Vice-Marshal Bennett, C.B.E., D.S.O. ; Mr. Dennis H. Handover, Air Adviser to the Railways Committee ; Mr. W. R. Verdon Smith, Director of the British Aeroplane Company.

Prizes :—£500, £100, £50.

Full conditions of competition may be obtained from " The Aeroplane," Bowling Green Lane, London, E.C.1.

Dartington Hall : Cottages

The Dartington Hall Trustees invite registered architects to submit in competition designs for cottages to be erected in the post-war period on a site at Dartington, Devon.

Assessors : Dr. Charles Holden [*F.*] and Mr. Lionel Pearson [*F.*].

Premiums :—£150 and a further £150 to be awarded at the discretion of the Assessors.

Last day for submitting designs :—31 August 1944.

No questions will be answered.

Conditions of the competition may be obtained on application to the Secretary, Dartington Hall Trustees, Dartington, near Totnes, Devon, on payment of a fee of 5s.

A short edition of the conditions modified to meet field conditions is being issued to the Forces through the following :—

Admiralty :—Instr. Commdr. F. S. Sobey, R.N., The Education Department, Admiralty, London, S.W.1.

War Office :—Lt.-Col. J. E. Nelson (for Director of Army Education), The War Office, 45 Eaton Square, London, S.W.1.

Air Ministry :—The Director of Educational Services, The Air Ministry, Adastral House, London, W.C.2.

Timber House Competition

The Timber Development Association, Ltd., invite architects of British nationality to submit in competition designs for a pair of semi-detached timber houses.

Assessors :—Mr. C. Cowles-Voysey [*F.*] ; Mr. Brian O'Rorke [*F.*] ; Mr. Frederick MacManus [*F.*] ; Mr. Bryan Latham, Vice-President of the Timber Trade Federation of the U.K. ; Mr. G. W. Grosvenor, Chairman of the Timber Building Manufacturers Association.

Premiums :—£250, £100 and £50.

Last day for submitting designs :—30 September 1944.

Last day for questions :—1 June 1944.

Conditions of the competition may be obtained on application to The Secretary, Timber Development Association, 75 Cannon Street, London, E.C.4.

Notices

ASSOCIATES AND THE FELLOWSHIP

Associates who are eligible and desirous of transferring to the Fellowship are reminded that if they wish to take advantage of the next available election they should send the necessary nomination forms to the Secretary R.I.B.A. as soon as possible.

DISCIPLINARY ACTION

Mr. Alfred Ernest Shennan, of North House, 17 North John Street, Liverpool, 2, a Fellow, was reprimanded by decree of the Council dated 16 May 1944, made pursuant to the Bye-Laws.

MEMBERS' COLUMN

WE congratulate Mr. and Mrs. Alfred Saxon Snell, who celebrated their diamond wedding on Wednesday, 7 June.

PARTNERSHIP

Mr. A. Y. Mayell, J.P. [*F.*], has taken into partnership Mr. J. L. Webb [*L.*] of Bradley & Webb. The firm will in future be known as Mayell & Webb, St. James' House, 173, Holland Park Avenue, W.11 and 18, London Road, Southborough, Kent. Telephone Nos. : Park 5010 and Southborough 487.

PRACTICES AND ADDRESSES.

F.R.I.B.A. in Southern County requires the services of an assistant with view to partnership. Applicants must be thoroughly qualified and competent and a public school man preferred. Reasonable capital required. Owing to housing difficulties, a single man under 30 would be an advantage, but not essential.—Box No. 3054.

ASSOCIATE MEMBER, now serving in the Forces, would appreciate communication from a member who may wish to take a partner after the war.—Box 2754.

Well-established Architectural Practice in Maidstone for sale owing to death of Principal. Goodwill, drawings, office and equipment optional.—Apply DAYMOND (Executor), 31, Christchurch Road, S.W.2. Tul. 6263.

Associate, medically discharged from the Army and now free, with over 20 years' varied experience since leaving Public School and Architectural Association, desires Working Partnership where real prospects of post-war work exist. Advertiser is useful designer and first-class draughtsman. London or country preferred.—Box 1068.

Part-time assistance offered in the preparation of surveys, working drawings, etc., by member with own office in Birmingham.—Box 1464.

MR. JOHN MACGEAGH [*A.*] has changed his office address to 23 Kingscourt, 17 Wellington Place, Belfast (Tel. : Belfast 25749).

Mr. Henry A. Ellis & Son [*F./L.*] have moved their offices to Mardy Chambers, 6 Wind Street, Swansea, where they will be pleased to receive trade catalogues, etc. Tel. No. 3400 remains the same as before.

WANTED

Member requires office accommodation in W.C. London district. Two rooms or will share a suite.—Box 1364.

Member H.M. Forces urgently needs copy *Architectural Review*, December 1936, to assist studies. Could any member oblige. Send to Captain F. Spencer, Officers' Mess, Stanhope Camp, Ashford, Kent.

FOR SALE

Faber Slide Rule for sale with instructions, price 15s. 6d.—Write Box 4644, c/o Acting Secretary, R.I.B.A.

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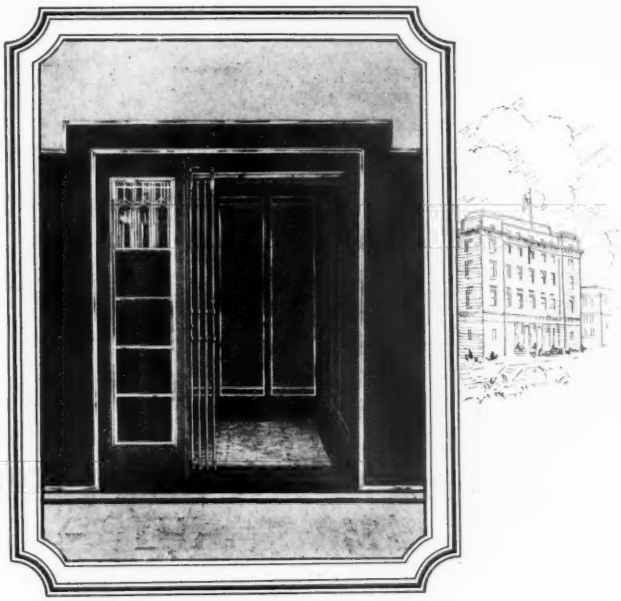

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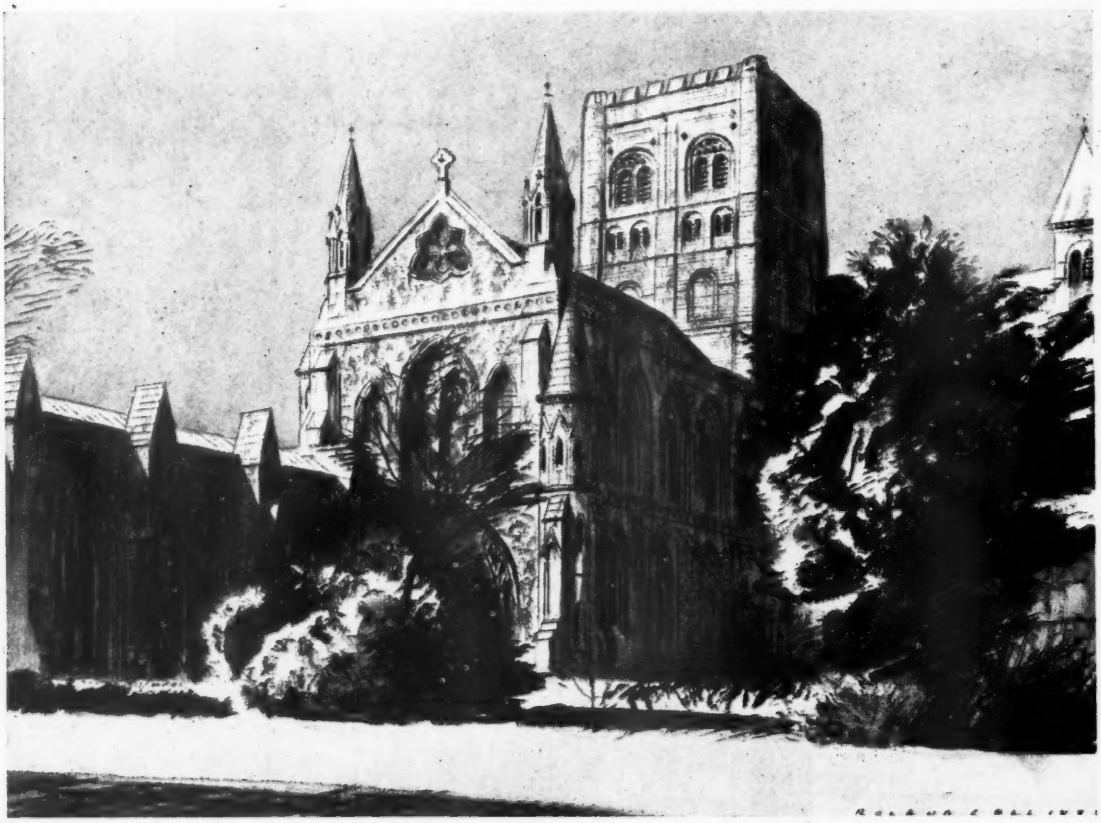

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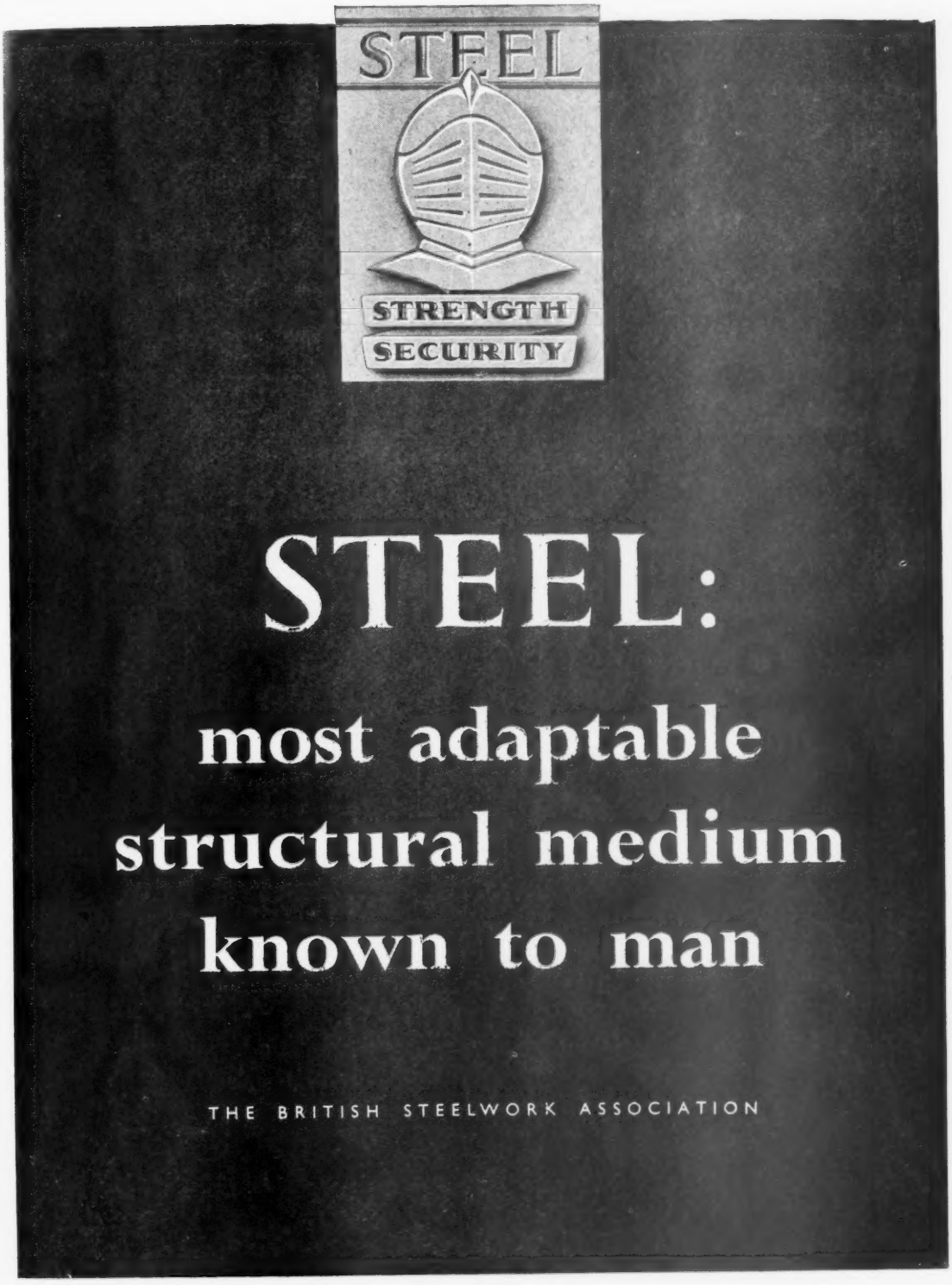
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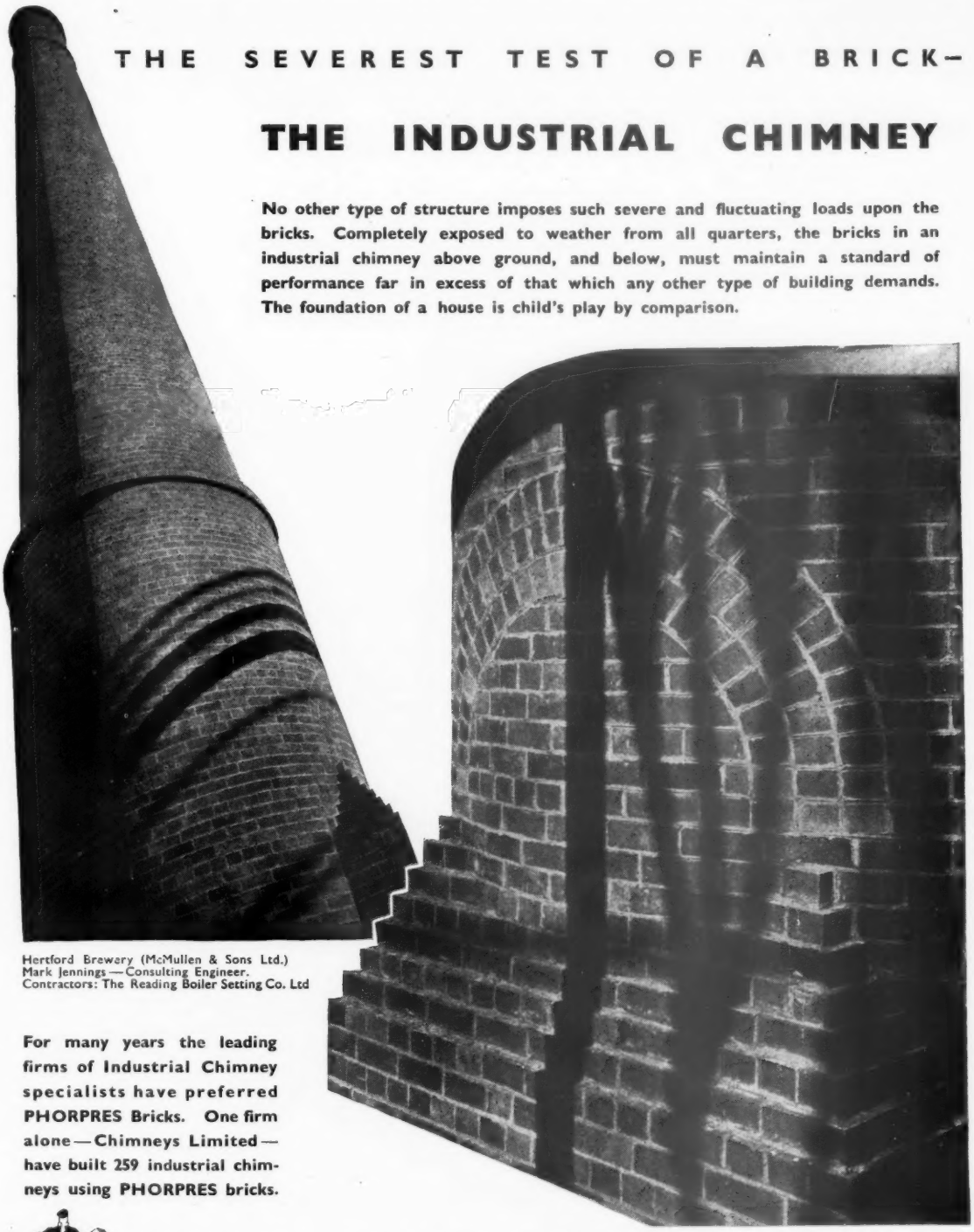

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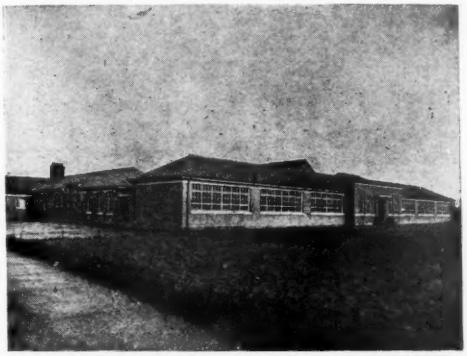

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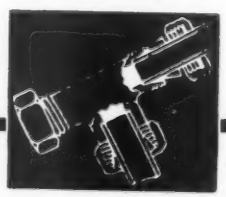

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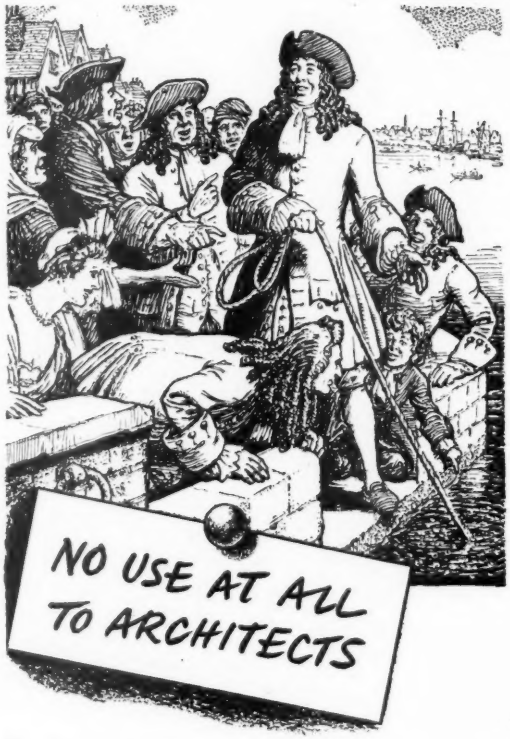

In 1706 a Mr. James Austin of London won a £100 wager by carrying out a novel trick of under-water cookery. He placed a pudding in a large tin pan, enclosed the whole in a sack of lime and lowered it ten feet deep into the Thames near Rotherhithe. Between two and three hours later the sack was hauled up, and the pudding . . . if anything slightly over-done . . . was eaten with gusto by the crowd. One way to do a job of cooking, certainly, but not one likely to appeal to the harassed host of the 'Dog and Bottle', even in those rough-and-ready times.

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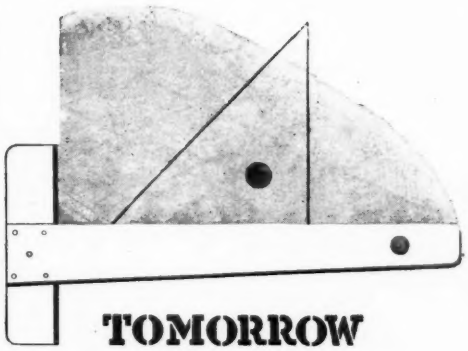

TOMORROW

When reconstruction begins it will be the aim and duty of the Abbey National Building Society loyally to co-operate with the Government, so that homes modern in design, satisfactory in quality, and unexceptionable in appearance and siting, are brought within the reach of all.

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TOMORROW

when we can turn to reconstruction, the experience of the war years will enable us to offer our former friends a yet higher degree of efficiency.

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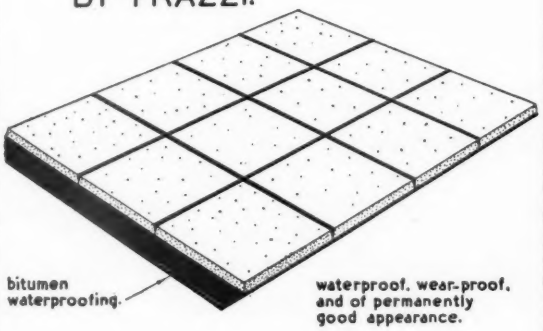
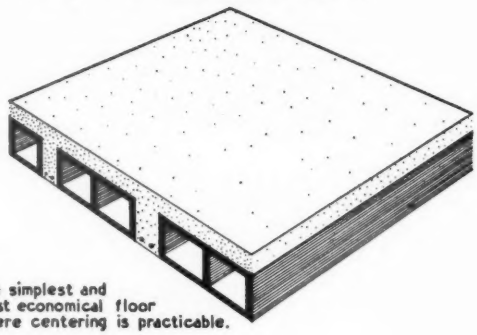


FRAZZI HOLLOW-BLOCK FLOOR & ROOF CONSTRUCTION.



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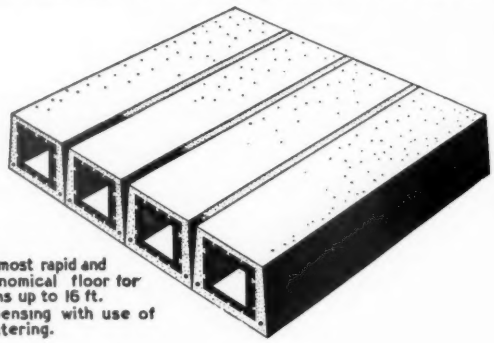

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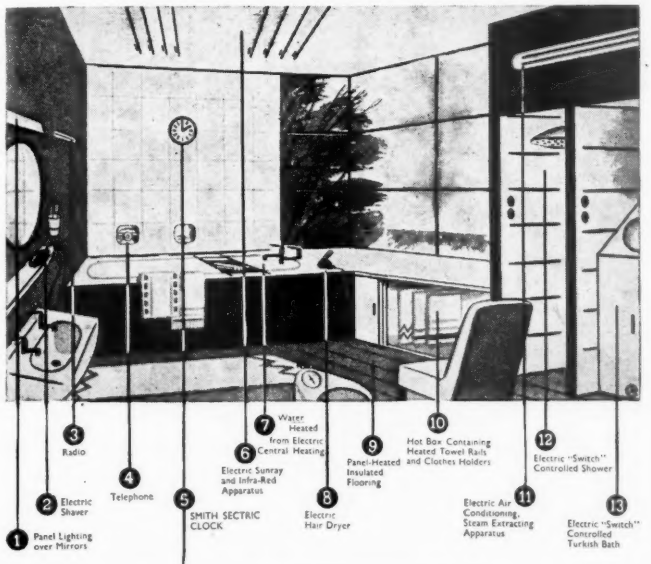
THE **ALL ELECTRIC** HOME OF THE FUTURE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3 Radio
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5 SMITH SECTRIC CLOCK
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No. 5.
THE BATHROOM

This suggestion is respectfully submitted to our professional friends with the thought that they will find interest and usefulness in a constructive layman's vision of what should be provided in the post war era.

★

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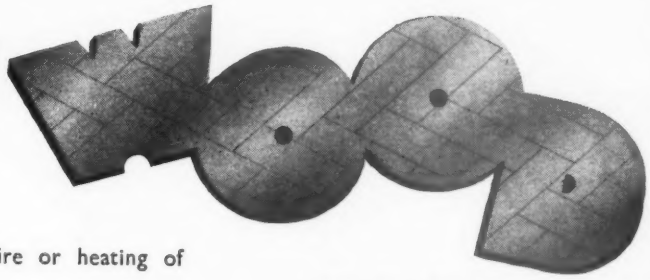

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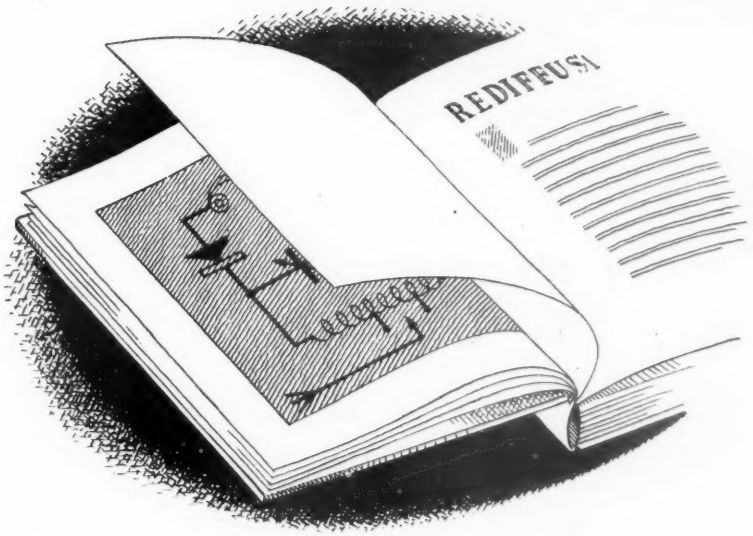
formed to promote and to exchange and codify technical information



Opening of Chapter iii

25 years ago we touched with reverent fingers those curious boxes bristling with valves, coils and crystals, studded with dials and switches, linked up with dry cells and wet cells. Twice daily they would produce (if we were lucky) the magical voice of Savoy Hill in the headphones, "hello, everybody..... this is 2 L.O...."

That was wireless in the George Stevenson stage: "brutal but it worked." Then science began to simplify and streamline. Valves went out of sight; coils disappeared from view; batteries no longer cumbered the carpet; headphones became a museum piece. Tuning reduced itself to the niceties of three knobs....two knobs....*one* knob. Reception had civilised itself.

There was still a next step. The same programme still didn't necessarily sound the same way in two different towns—or even in two neighbouring houses. It was still at the mercy of local conditions and individual apparatus. It might be pretty good or terribly bad.

Wired broadcasting opens Chapter iii. Rediffusion replaces aerial and receiver by direct line reception and a switch in the wall—just like the light switch. News and entertainment of unvarying quality can be laid on at will to any subscribing home in the area—just like the telephone service. Good reception is standardised as well as good transmission.

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